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## Performing under pressure: Exploring the psychological state underlying clutch performance in sport

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### ABSTRACT

Clutch performance is improved performance under pressure. However, little research has examined the psychological state experienced by athletes in these situations. Therefore, this study qualitatively examined the subjective experience underlying clutch performance across a range of sports (e.g., team, individual) and standards (Olympic to recreational athletes). Sixteen athletes ( $M_{\text{age}} = 27.08$  years;  $SD = 6.48$ ) took part in in-depth, semi-structured interviews primarily after an exceptional performance ( $M = 4.38$  days later;  $SD = 3.14$ ). Data were analysed inductively and thematically. Clutch states involved 12 characteristics, including heightened and deliberate concentration, intense effort, and heightened awareness, which distinguished the experience of clutch from other optimal psychological states such as flow. Other characteristics, such as perceptions of control, were also reported and supported previous experimental research on clutch. These findings present in-depth qualitative insights into the psychological state underlying clutch performance, and are discussed in relation to the existing literature on optimal psychological states in sport.

### ARTICLE HISTORY

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### KEYWORDS

Choking; conscious control; expertise; optimal experience; peak performance

The field of positive psychology (Seligman & Csikszentmihalyi, 2000) emphasises understanding of optimal human functioning through themes such as optimal subjective experiences and performance excellence. The competitive environment of sport is an ideal context to investigate optimal functioning as athletes of all standards of competition strive to achieve peak performances and new levels of achievement (Jackson & Kimiecik, 2008). Indeed, a key objective among coaches and sport practitioners is to help athletes achieve exceptional performances and new levels of achievement more consistently (Harmison, 2011). Researching the subjective experience of excellent sport performances will build understanding of the processes underlying these outcomes, and the various strategies that help induce or prolong them (for example, through targeted psychological skills training). This study aimed to qualitatively explore the important, but relatively under-studied, subjective experience underlying clutch performance in sport.

### Psychological states underlying excellent performance

Professional golfers (Swann, Keegan, Crust, & Piggott, 2016) reported experiencing two distinct subjective states during excellent performances (e.g., winning a tournament), described as: (1) “*letting it happen*” which corresponded to flow; and (2) a more purposeful, effortful and intense state described as “*making it happen*”. While there were a number

of similarities in how each state was experienced (e.g., confidence, absorption, enjoyment), making it happen was described as heightened and effortful concentration, intensity of effort and heightened awareness of the situation – which do not correspond to previous conceptualisations of flow (e.g., Jackson & Csikszentmihalyi, 1999) or peak performance (e.g., Krane & Williams, 2006). Moreover, each state occurred through a separate process: flow occurred through a relatively gradual build-up of confidence; whereas “making it happen” was a more sudden appraisal of situational demands and “stepping up” of effort and concentration. Therefore, “making it happen” emerged as a psychological state underlying excellent performance which had not yet been conceptualised qualitatively. Indeed, Swann et al. (2016) noted that “making it happen” occurred in circumstances similar to those required for clutch performance (Hibbs, 2010, see below).

Subsequently, Swann et al. (under review) examined the psychological states underlying excellent performance across a range of sports (team, net/wall, sprint, endurance and outdoor/adventure activities) and standards (Olympians to recreational athletes). In event-focused interviews, those athletes reported similar findings to professional golfers (Swann et al., 2016) in terms of the states experienced and processes through which they occurred. In turn, those findings provided support for the existence and relevance of this clutch state to excellent performance in sport. This means that, to date, two studies (Swann et al., 2016; under review) have qualitatively suggested the existence and importance of the psychological

state of clutch (“making it happen”) in excellent performance. However, both previous studies adopted a broad focus on both flow *and* clutch states. For example, those studies described the processes through which each occurred, with relatively little emphasis on how each state was experienced by athletes. Therefore, an in-depth qualitative exploration of the psychological state underlying clutch performance in sport has not yet been conducted – thus representing the primary aim of this study.

## Clutch performance

The term “clutch” performance appears to have originated in America, primarily through statistical analysis of baseball hitting (e.g., Cramer, 1977). A clutch response has been defined as “any performance *increment* or *superior* performance that occurs under pressure circumstances” (Otten, 2009, p. 584). Moreover, a clutch performance occurs when an athlete succeeds during a pressure situation, is aware that the performance occurs during a pressure situation, has the capacity to experience stress, perceives the outcome of the competition as important and succeeds largely through effort (Hibbs, 2010). Therefore, clutch performance is about above-average performance in a competitive pressure situation, during which the athlete is aware of the pressure – as in professional golfers’ descriptions of “making it happen.”

To date, the study of clutch performance has primarily focused on objective performance scores. For example, an archival study of major league baseball (Otten & Barrett, 2013) found that pitching statistics were significantly correlated from regular season (where there is less pressure) to post-season (where there is more pressure). In another archival study of professional basketball games, eight basketball experts ranked players according to their perceived reputation of being clutch shooters (Solomonov, Avugos, & Bar-Eli, 2015). Players with a reputation of clutch performances had better statistics in the most decisive phases of the game and appeared to be less affected by environmental conditions during pressure conditions. Researchers have also used experimental methods to examine clutch performance. In a study of basketball shooting, participants were asked to perform two sets of 15 basketball free throws and (in the experimental condition) were informed that their performance would be videotaped to induce performance pressure (Otten, 2009). Individuals who reported feelings of “perceived control” performed better in the pressure condition, suggesting that this construct is important for clutch performances to occur.

Two studies have also used qualitative methods to explore clutch performances. Hill, Hanton, Matthews, and Fleming (2010) interviewed six elite golfers who reported choking frequently under pressure, and five elite golfers who reported excelling frequently under pressure. Those who excelled under pressure reported lowering of expectations, a greater external focus on task-related cues, a greater focus on performance improvement in preference to winning, a perception that anxiety was helpful to their performance, and greater perceived control over their performance. In another study of elite golfers, interviews were conducted with six golfers who had experience of both choking and clutch performances under

pressure (Hill & Hemmings, 2015). The golfers reflected on the coping strategies they had adopted when they had choked and when they had a clutch performance. More approach-based coping strategies (i.e., those in which the athlete actively addresses, removes, or changes the stressor; Hill & Hemmings, 2015) were reported during a clutch performance, including adoption of a pre and post-shot routines, reappraising threatening stressors, and placing oneself under pressure during practice to rehearse coping strategies. One study used a mixed-method approach to sample choking-resistant and choking-susceptible athletes (Mesagno & Marchant, 2013). The athletes completed 180 netball shots under conditions of low and high pressure, and were interviewed afterwards. Under pressure, the choking-resistant participants used coping strategies that directly tackled the stressor, whereas choking-susceptible athletes used coping strategies that involved ventilating, managing, or palliating emotions.

Taken together, these findings provide evidence for the existence of clutch performance and offer insight into how athletes manage pressure during critical conditions. However, less is known about the subjective state experienced by athletes while excelling under pressure. Therefore, this study aimed to build on the preliminary findings of Swann et al. (2016; *under review*) by qualitatively exploring, in-depth, the subjective experience underlying clutch performance in sport. Specifically, we sought to interview athletes as soon as possible after an excellent performance to maximise detail, accuracy, and chronology of their accounts of clutch performance (cf. Swann et al., 2016). In turn, we seek to contribute to calls for a shift in the literature to focus on the study of clutch performance under pressure (e.g., Otten, 2009).

## Method

### Participants

Sixteen athletes (5 women and 11 men) participated in this study. The average age of participants was 27 years ( $SD = 6.48$ ; range = 20 to 40 years). These athletes were from England ( $n = 13$ ), Ireland ( $n = 1$ ), Scotland ( $n = 1$ ), and New Zealand ( $n = 1$ ) and were competing in world class (e.g., Olympians, winner of Rugby Union world cup) to recreational events (e.g., running marathons). Thirteen athletes (see Table 1) were interviewed after a specific excellent performance ( $M = 4.38$  days later;  $SD = 3.14$ ; range = next day to 9 days later). The average duration of these event-focused interviews was 61 min ( $SD = 17.51$ ). Follow-up interviews were conducted with three additional athletes in order to enhance trustworthiness (see below).

### Sampling

We purposively sampled participants who had recently achieved an excellent performance. These individuals were therefore more likely to experience optimal psychological states and be able to articulate such experiences with detail and clarity. Furthermore, we sought athletes from a range of sport types and standards where the demands of competition are likely to differ. Specifically, we recruited athletes ranging from world-class elite to sub-elite/recreational standards (Swann, Moran, & Piggott,

**Table 1.** Participant demographics.

|               | Activity               | Standard            | Sampling Rationale                                |
|---------------|------------------------|---------------------|---|
| Event-focused | Basketball             | International       | Self-reported clutch performance in recent match  |
|               | Badminton A            | Professional        | Reached final of national championship            |
|               | 200 m sprinter         | International       | Won national university championships             |
|               | Long distance runner A | Recreational        | Personal best in marathon                         |
|               | Long distance runner B | Regional            | Personal best in marathon                         |
|               | Wheelchair tennis      | Professional        | Won major championship                            |
|               | Climbing A             | Sponsored           | Self-reported clutch performance in recent climb  |
|               | Climbing B             | Experienced amateur | Completed climb of new difficulty                 |
|               | Netball                | Regional            | Player of the match in important club game        |
|               | Tennis                 | Professional        | Qualified for Wimbledon Championships             |
|               | 110 m hurdles          | International       | Won national university championships             |
|               | Triathlete             | Semi-professional   | Won national half-ironman event                   |
|               | Hockey                 | Club                | Awarded player of the match after important match |
|               | Rugby Union            | Professional        | New Zealand All Black and World Cup winner        |
|               | Badminton B            | Professional        | Olympic athlete and Commonwealth Games medallist  |
| Follow-up     | Polar explorer         | Sponsored           | World record holder for polar expeditions         |

2015), and from activities which included team sports, endurance events, sprint events, net/wall games, and outdoors/high-risk activities. Excellent performances were considered to include personal bests, winning tournaments (or placing highly in competitive events), and recognition from others (e.g., player of the match awards). Importantly, we sought performances (or parts of the performance) which the athlete considered to be excellent and ascertained this at the start of the interview. A number of strategies were used to recruit athletes as soon as possible after such performances. Using personal contacts, athletes were recruited at the beginning of the study and asked to contact the authors in the event of a performance that they considered to be excellent. Additionally, athletes were contacted by the research team after performances which appeared to match the criteria above. These performances were primarily identified through internet-based performance reports, and athletes were contacted directly through management companies, personal websites, or personal connections of the research team.

### Procedures

Ethical approval was granted by a university research ethics committee prior to commencing the study. After making contact, participants were asked if they would be interested in taking part in an interview about that event. Upon agreeing, the interviews were arranged to take place as soon as possible. Four interviews were conducted face-to-face, four were conducted via Skype, and eight were conducted via telephone. A deliberate process was employed to develop rapport in order to minimise differences in the quality of data obtained between face-to-face and electronic interviews (DiCicco-Bloom & Crabtree, 2006). All participants provided informed consent after the researcher had explained the general purpose of the study. Data were collected until saturation was perceived (i.e., no new themes emerged; Coté, Samela, Baria, & Russell, 1993). All interviews were recorded and brief notes were taken during the interviews. The recordings were later transcribed verbatim.

### Interview schedule

A semi-structured, open-ended approach was adopted to provide the interviewee freedom to elaborate and develop areas

of perceived importance, while also using specific probing questions where necessary to gain further insight (Sparkes & Smith, 2014). Similar to Swann et al. (2016), the event-focused interview guide focused primarily on the participant recalling in chronological sequence the performance for which they were sampled. When they described situations matching those of clutch performance (as defined by Otten, 2009; Hibbs, 2010), the interview focused on their subjective experience of performing in that situation. Therefore, key themes addressed the subjective experience underlying clutch performance, and questions included: “Can you describe in as much detail as possible what this experience was like?”; “What were the clearest indicators of being in this state?”; and “what were you thinking and feeling at the time?” Probing questions were also asked, such as: “can you elaborate on that?” A conversational and open-ended approach was adopted by the interviewer (i.e., first author) to develop rapport and allow new themes to emerge (Potter & Hepburn, 2005).

### Data analysis

A team approach was used to guide data analysis. The first author collected the data and became familiar with the transcripts through a process of *in-dwelling* – reading and re-reading the transcripts (Maykut & Morehouse, 1994). A detailed transcript was produced for each participant and was used to select relevant quotations and generate initial codes (Braun & Clarke, 2006). Once the data for all participants had been collated an emergent cross-case analysis was conducted (Stake, 2006). This process involved the research team searching for parallels between participant experiences in order to identify patterns and consistent themes in the subjective experience underlying clutch performance. Consistent codes were categorised and defined as higher-order themes. The themes were reviewed for consistency and transparency using the trustworthiness processes outlined below (Braun & Clarke, 2006).

### Trustworthiness

The term *trustworthiness* has been used by qualitative researchers to describe methods that ensure optimal quality

in the work (Sparkes & Smith, 2014). A number of steps were taken to establish trustworthiness. First, *peer debrief* was conducted between the first author (lead investigator) and each of the co-authors who provided ongoing guidance, critical evaluation of the data, and challenged the lead researcher's assumptions (Creswell & Miller, 2000). This process took place through regular formal discussions, and informal meetings with each team member. For example, several conversations discussed the various approaches to coding themes and the most suitable labels for those themes.

The peer debrief was concerned with the ongoing *process* of data collection and analysis. In addition, 'critical friends' were asked to critique and provide feedback about the *results* of these processes (Smith & Caddick, 2012). This dialogue centred on the fairness, appropriateness and believability of the researchers' interpretations of the data and analysis (Smith & Caddick, 2012). This process took the form of follow-up interviews with three athletes ( $M_{\text{age}} = 34$  years,  $SD = 5.19$ ) who were not involved in the event-focused data collection (interview length,  $M = 60$  min;  $SD = 17.03$ ). The purpose was to develop emergent themes, refine ideas, and assess the adequacy, relevance, and meaningfulness of themes (Onwuegbuzie & Leech, 2007). These athletes were from England ( $n = 2$ ) and New Zealand ( $n = 1$ ), and high performance athletes were sought on the assumption that they would have more experience to draw on (Jackson, 1996). These athletes included a professional rugby union player with over 100 caps for New Zealand All Blacks who had won the Rugby World Cup; a professional badminton player who had competed in the Olympics and medalled in the Commonwealth Games, and a world record holding polar explorer. These athletes were recruited via snowball sampling and personal contacts. The participants were provided an overview of the study findings and asked whether the findings corresponded with their own experiences. For both the follow-up interviews and additional participants, strong agreement was expressed with the findings (i.e., the findings corresponded with their experiences and no changes were suggested). To obtain further data, these athletes were asked to provide examples from their own experience to illustrate how the presented findings related to their performance. These data were analysed using the same processes described above, and were incorporated in the final analysis where the corresponding athletes are identified by "2" to indicate the second phase of interviews.

## Results and discussion

The analyses revealed 12 characteristics which made up the subjective experience underlying clutch performance (see Table 2). Similar to previous studies (Swann et al., 2016, *under review*), some characteristics overlapped with flow states, while others distinguished this experience. The following sections present the 12 emerging characteristics of clutch states in order of those which distinguish this state, and then those that overlap with flow. Each is discussed in relation to the existing literature, before a General Discussion reflects on the implications of these findings.

### Defining characteristics of clutch states

Six characteristics of clutch states appeared to be distinct from the existing research on optimal psychological states in sport, such as flow (Csikszentmihalyi, 2002; for a review see Swann, Keegan, Piggott, & Crust, 2012) and peak performance (e.g., Anderson, Hanrahan, & Mallett, 2014; Krane & Williams, 2006). As such, these appeared to be defining characteristics of clutch states.

#### Complete and deliberate focus

Clutch was described as a state of *complete concentration* and *increased focus* on the task: "just focussed on hitting that ball where I wanted to hit it that I wasn't really concentrating on anything else...I've never focussed like that before" (Wheelchair tennis player). This concentration was sustained throughout the clutch state, represented by the theme *staying focused*. Importantly, this concentration was effortful and deliberate: "It's very much a conscious effort to really focus...a conscious effort really to make myself play better...it was very much that 'I've got to play better now'" (Badminton player B: 2). This theme is different to the effortless attention reported during optimal performance states previously (e.g., Bruya, 2010), and suggests that conscious control of performance can be important under pressure (i.e., during clutch states).

#### Intense effort

The athletes described performing with maximum effort during clutch states. Some described *giving everything*: "I was digging as deep as I could" (Triathlete A). Others reported *working/trying harder* in clutch: "It didn't just feel like everything kind of came together and happened easily...I had to fight really hard in the match. I basically won, I feel like, because I tried harder than her, I put in that extra effort" (Squash player), and "I had to really work for it and push...I basically forced the energy to come out of me" (200 m sprinter). These efforts were described as *consciously demanding*: "I think it's more conscious effort than unconscious natural effort...Definitely more conscious" (Climber B). This characteristic was reported in relation to clutch often occurring at the end of performances: "you're putting as much effort in because you know that, after that, there's nothing to save your energy for. So you can kind of put it all out on the line...you feel like you're trying more" (Badminton player B: 2). This theme differs to the perceptions of effortless performance reported in other optimal psychological states such as flow (e.g., Jackson, 1996) and peak performance (Krane & Williams, 2006).

#### Heightened awareness

The athletes described a *heightened awareness of self* during these states: "reflecting on this tournament...I can tell you what I was thinking at what point because I was very aware of myself and my thoughts" (Wheelchair tennis). Athletes reported thinking about the performance and *self-monitoring* during clutch states:

I was very much consciously thinking in that game. I was thinking about what I was doing...I was telling myself what I



**Table 2.** The subjective experience underlying clutch performance.

|  | Categories                    | Higher-Order Themes               | Example Codes   |
|--|-------------------------------|-----------------------------------|---|
| <b>Defining Characteristics of Clutch States</b> | Complete and deliberate focus | Complete focus                    | Concentrating fully; couldn't have concentrated more; completely committed to what is in front of you |
|  |                               | Staying focused                   | Kept my focus throughout  |
|  | Intense effort                | Increased focus                   | It's a conscious effort to really focus on the performance  |
|  |                               | Giving everything                 | I was pushing to my limit – digging as deep as I could  |
|  | Heightened awareness          | Trying harder                     | You're trying as hard as you can  |
|  |                               | Conscious effort                  | It's like a conscious effort to make myself play better;  |
|  |                               | Awareness of self                 | I was very aware of myself and my thoughts  |
|  | Heightened arousal            | Self-monitoring                   | Consciously thinking about what I was doing and what I needed to do                                   |
|  |                               | Aware of importance               | It was a stressful situation; knew how important it was   |
|  |                               | Awareness of surroundings         | I was definitely more aware of what's going on around me  |
| <b>Characteristics Overlapping with Flow</b>     | Absence of negative thoughts  | Anxious/tense                     | You get more nervous; Everything was tense  |
|  |                               | Pumped up                         | You start getting pumped up; you've got more energy   |
|  | Automaticity of skills        | Nervous energy                    | There's a mix of nerves and excitement  |
|  |                               | Not worried about anything        | There's no worrying about anything else, you're just focussed on the next move                        |
|  | Absorption                    | Automaticity of skills            | I wasn't thinking about it any more – it had become automatic   |
|  |                               | Absorbed in performance           | I didn't even know how many people were around me   |
|  | Confidence                    | Forced confidence                 | I back myself when the pressure's on; it's like a forced confidence                                   |
|  |                               | Confident in meeting task demands | I knew I could do it; knew I could win; knew I had the ability  |
|  | Perceived control             | Sense of control                  | It's about making sure you're in control  |
|  |                               | Enhanced motivation               | There's more motivation; I was more motivated   |
|  | Enhanced motivation           | Enjoying the situation            | Really enjoying the game; enjoying being pumped up  |
|  |                               | Enjoyment paradox                 | Enjoying close contest but not enjoying the fact you might lose                                       |
|  | Altered perceptions           | Less enjoyment                    | Definitely not as enjoyable as other parts of the race  |
|  |                               | Alertness                         | We needed to be more switched on – more alert   |
|  |                               | Time transformation               | It feels like it takes longer; performance slows down   |
|  |                               | Heightened senses                 | Had a heightened sense of smell for the weather (in the mountains)                                    |
|  |                               | Loss of memory                    | I don't actually remember the last game – I don't actually know what happened                         |

needed to do, where I needed to go...I think that telling myself [to do it]...just meant I did it rather than it just happening (Netballer).

The athletes were aware of the *importance of the situation* during clutch states, which led to perceptions of stress and pressure. A polar explorer (2) described how “there was a raised awareness of...the potential risk and the seriousness of what we were doing.” Badminton player A also described:

I really felt at that point the pressure was quite high. Yeah, I just didn't want to lose it...that was probably the most pressure we'd had on us throughout the tournament really...there was a lot of pressure obviously put on ourselves to beat them, but also, the national coaches and all the other players were expecting us to win.

This theme was about *importance* rather than specific *demands* of the situation and was reported during the clutch state (i.e., separate to an initiating appraisal).

### Heightened arousal

The athletes described the clutch state to be a *tense* experience. For example, a netballer described how, during clutch moments: “you're always feeling anxious, like, ‘shit, what if something happens and we don't actually win?’” Others described being *pumped up* and having *energy*. For example, “You do have more energy...There's an energy you get from being so focused” (Rugby union player: 2). A squash player explained combined feelings of nervousness and excitement:

I was very nervous, so I kind of didn't tire mentally, which helped me stay focused...I guess near the end of the game I get...a mix of

nerves and excitement...Nervous that...you're not going to close it out, and excited that you've almost won the game.

This quotation suggests that the heightened arousal state (anxiety and excitement) is considered facilitative (helpful) to performance, which is consistent with the existing literature (e.g., Hanton, Neil, & Mellalieu, 2008). Similarly, choking-resistant athletes in Mesagno and Marchant (2013) described nerves and butterflies when performing under pressure, and golfers who excelled under pressure were able to control their anxiety symptoms and interpret them positively (Hill & Hemmings, 2015).

### Absence of negative thoughts

Despite being aware of the importance of the situation, these athletes described an absence of negative or self-critical thoughts during clutch states, even in moments of highest pressure as an All Black rugby player (2) reported:

[In] the World Cup Final...with one minute to go, and everything riding on it...24 years of history...There's a fair bit of pressure on this, you know what I mean?...I wasn't thinking about that. I knew the job I had to do; I wasn't thinking about 24 years or what the crowd thought, or whatever – I was in a zone. I was getting the job done that I've always done and it didn't matter that it was the World Cup final.

The absence of negative thoughts and loss of self-consciousness have been reported previously as part of flow and peak performance states (Jackson & Csikszentmihalyi, 1999; Krane & Williams, 2006). Similarly, choking-resistant athletes have described staying positive and optimistic under pressure (Mesagno & Marchant, 2013), and golfers reported increased goal expectancy during clutch performance (Hill & Hemmings,

2015). That is, despite awareness of pressure and importance, the athletes remained positive and optimistic during clutch.

### Automaticity of skills

Even though athletes reported conscious awareness and deliberate thought processes, they also reported automatic execution of skills during clutch states. For example, a marathon runner described how the process of running became automatic in the finishing stages; and a rugby player reported not thinking about execution of specific skills such as passing the ball. The present data suggests that *both* automatic and controlled processes may be involved during clutch states. That is, conscious effort is invested into management of the performance, while execution of the specific skills remains automatic. This finding is in contrast with conceptualisations of optimal states such as flow (Csikszentmihalyi, 2002) and peak performance (e.g., Krane & Williams, 2006) which are characterised as automatic, effortless experiences. Instead, these data are in line with more recent and complex perspectives which emphasise the role of conscious processing in expert performance (e.g., Toner & Moran, 2014). For example, it has been suggested that competitive performance regularly presents situations in which conscious and critical deliberation is essential to maintain performance proficiency and negotiate task demands (Toner, Montero, & Moran, 2015) – as appears to be the case in clutch states.

### Overlapping characteristics

The remaining six characteristics appeared to be consistent with those reported during optimal psychological states previously. That is, these characteristics overlapped with aspects of the experience of these other states.

### Absorption

The athletes described being totally absorbed in what they were doing. Long distance runner A reported that: “I didn’t even hear my friends shouting and screaming at me...I couldn’t even tell you how many people were even on the finish stretch with me.” Others explained how they were only aware of relevant factors during clutch states:

You’re focussed and you’re right in the moment...there are 82,000 people there; [but] I wouldn’t even know they were there. That’s how switched-on you are...It’s there at that very moment. You are there, you are aware of everything, you are completely committed to whatever presents in front of you (Rugby union player: 2).

Similar to other states such as flow, choking-resistant athletes in Mesagno and Marchant (2013) described absorption in the performance (e.g., to the point of not noticing the audience).

### Confidence

The athletes described having confidence during clutch states. This confidence appeared to be robust and pre-existing for some athletes who “backed themselves”: “If the pressure’s on and it’s a crunch play, I back myself” (Rugby union player: 2). Others described how “you give yourself a forced confidence level” (200 m sprinter), for example, through skills such as self-talk as Climber A reported:

If I know that I’ve got a hard pitch and I know I’m going to try as hard as I can...then I, sort of, build up to that and talk myself into being able to execute those moves and try as hard as I can...I can say I almost force myself into a...forced...state, forced situation... [where] I can kind of shut out everything else and execute those moves.

Others had *confidence in meeting demands* that were more specific to the performance: “I just felt really confident...going into that last game I was like “this is my serve, I’m not going to miss”...so I’m really confident” (Wheelchair tennis player). Confidence relates to perceptions of control (Otten, 2009, see below) reported as necessary for clutch performance. Similarly, McKay, Lewthwaite and Wulf (2012) reported that enhanced expectancy improved performance in challenging situations. In turn, this theme suggests that clutch performance occurs in situations perceived as a challenge rather than threatening or harmful (e.g., Jones, Meijen, McCarthy, & Sheffield, 2009).

### Perceived control

Similarly, athletes described perceptions of control over their performance and the situation during clutch states. This perception seemed to be a by-product of making progress and being purposeful. For example, a 200 m sprinter reported: “I think [I’m] more in control...because...you can actually feel like you’re physically forcing everything to move forward.” This theme supports Otten’s (2009) experimental findings that perceived control distinguished between those who performed better under pressure, and those whose performance deteriorated under pressure. Perceived control is suggested to lead to facilitative rather than debilitating anxiety (Hanton et al., 2008), and challenge rather than threat states (Jones et al., 2009), which may explain its importance for clutch performance.

### Enhanced motivation

Athletes also reported feeling more motivated during their clutch state. This sense related to feedback obtained during the performance/state and increased confidence described above. For example, a tennis player reported how this motivation related to the performance context: “I believed I could win. It was just whether I could get over the finish line...I guess that’s kind of more motivation. I enjoy it when it gets to that stage and every point is quite a big point.” This finding does not appear to relate to the *type* of motivation experienced – which could be either intrinsic (to survive) or extrinsic (to win a trophy and prize money) – but rather the *intensity* of motivation (e.g., Brehm & Self, 1989).

### Enjoyment paradox

The athletes often reported gaining enjoyment from the clutch state after the event (see below) and some described enjoyment during the event. For example, a rugby union player (2) described *enjoying the situation*: “For me, that’s when I feel in my element and that’s the part that I enjoy.” However, given the effort and high arousal associated with this state (described above), it is perhaps unsurprising that others described it as “definitely not as enjoyable as other parts of the race” (Long-distance runner A). One example was this summary:

It's funny because you do enjoy it and you don't enjoy it. Obviously you want to win, so with the fact you might lose, you're not enjoying it in that sense. But you're enjoying the fact that it's becoming close and, if you end up winning the set, then the emotion that you'll feel will be awesome (tennis player).

Enjoyment is also reported in states of peak performance and flow, suggesting that the clutch state is a similarly optimal experience, that is, a positive state of consciousness that provides strong positive feelings associated with happiness and a self-fulfilling experience that results from exerting effort (Jackson & Wrigley, 2004).

### Altered perceptions

The athletes reported feeling *alertness* during clutch states: "we definitely had to be more alert...the focus was much more on being alert and paying more attention to the conditions and to our safety" (Polar explorer: 2). Some described a sense of *time slowing down*, while athletes also reported a *loss of memory*: "In the semi-final I don't actually remember the last game...I really just don't remember the last point or the last game at all" (Wheelchair tennis player). Others reported *heightened senses*:

You actually see what's going on now, what's around you; you know what's going to happen. You kind of know what position you're in, you kind of know what you're going to do next as well... You're seeing everything and feeling everything going on around you (200 m sprinter).

Similar perceptions have been reported in athletes' experience of flow, including time transformation (Jackson & Csikszentmihalyi, 1999), and heightened senses (Swann, Crust, Keegan, Piggott, & Hemmings, 2015), meaning this characteristic appears common across optimal states.

### General discussion

This study explored in-depth the subjective experience underlying clutch performance among athletes from a range of sports and performance levels. Our findings show that clutch states comprised twelve characteristics including intense effort, heightened awareness, effortful and deliberate concentration, and heightened arousal. In turn, this study extends previous work on the psychological states underlying excellent performance (Swann et al., 2016; *under review*), and research on clutch performance (e.g., Otten, 2009) by providing insight into how athletes experience this state and perform under pressure.

Important characteristics emerged that reinforce the need to distinguish this state from other optimal experiences in sport. Moreover, the findings of this study show that this subjective experience is relevant to performance in a range of athletic domains, that is, across a variety of sports and standards. Clutch states were reported to involve increased/maximal effort rather than being effortless; conscious processing rather than being fully automatic; intensity, excitement and anxiety; effortful concentration; and heightened awareness of event importance. These themes do not correspond with previous conceptualisations of peak performance (Anderson et al., 2014; Krane & Williams, 2006) or flow (2016; Swann et al., 2012).

Furthermore, some of these descriptions correspond with previous findings about performing under pressure. The experience of greater self-reported effort (Cooke, Kavussanu, McIntyre, & Ring, 2010), heightened excitement and arousal that relate to better concentration (Allen, Jones, McCarthy, Sheehan-Mansfield, & Sheffield, 2013), anxiety that is associated with enhanced effort (Eysenck, Derakshan, Santos, & Calvo, 2007) and facilitative interpretations of anxiety symptoms (Hanton et al., 2008) that coincide with perceptions of control (Jones, 1995), have all been reported in the literature and were consistent with the concept of clutch performance detailed by athletes here. Furthermore, expert athletes are often found to revert to positive monitoring in an attempt to maintain excellent performance (Oudejans, Kuijpers, Kooijman, & Bakker, 2011). This research is consistent with the present findings, where athletes focused on self-monitoring and conscious processing, but did not focus on execution of skills or movements that were instead described as automatic.

Indeed, one important finding was that the clutch state was described as a conscious process, and the athletes reported self-monitoring during their performance. Similarly, they described heightened awareness of themselves and the situation, as well as consciously investing intense effort. This finding has implications for the broader literature on expertise and skilled performance. For example, traditional and contemporary theories of motor skill-learning (e.g., Fitts & Posner, 1967; Shiffrin & Schneider, 1977) propose that expert performance is largely automatic in nature, emphasising the "spontaneous" nature of skilled performance (Toner & Moran, 2014). A postulate of these accounts of expertise is that performance deteriorates when a performer attempts to exert conscious control during skill execution (Beilock, Carr, MacMahon, & Starkes, 2002; Masters & Maxwell, 2008). Toner and Moran (2014), however, discussed how this postulate has been challenged by empirical evidence (e.g., Geeves, McIlwain, Sutton, & Christensen, 2014) which suggests that expert performers can strategically deploy conscious attention during performance. The present findings suggest that during clutch performance, athletes across a range of standards can perform in a consciously-controlled manner where specific *skills* are executed automatically, but that their psychological state more generally is consciously regulated (e.g., by increasing effort and concentration). In turn, it is arguably important to avoid a "one size fits all" approach to expert performance, but rather to understand the specific states in which experts perform (e.g., flow and clutch), and the different processing and self-regulation strategies which are relevant in those contexts.

Standard definitions of clutch performance (Hibbs, 2010; Otten, 2009) may require refinement in light of the findings presented here. Specifically, the present study indicates that a clutch performance can be experienced in situations beyond competition such as in dangerous situations (polar expeditions) and in training. The descriptions of clutch states may also capture the subjective experience of the "end-spurt" (Lima-Silva et al., 2013; Swann et al., *under review*). That is, in events which require pacing (e.g., marathons), athletes realise that they can significantly increase their speed without reaching exhaustion before the finishing line, and make a conscious decision to go for an end spurt (Marcora, 2008).



Therefore, the experience of an end spurt in pacing contexts may be one instance of more widely-experienced clutch states.

Indeed, *optimal experience* is defined as comprising multi-dimensional aspects of positive experiences in sport associated with happiness and self-fulfilling experiences that result from exerting effort (Jackson & Wrigley, 2004). Most research has focused on flow, peak experience, and peak performance as core concepts under this umbrella term (Jackson & Kimiecik, 2008). The present findings suggest that clutch states provide analogous positive feelings (intrinsic rewards) and self-fulfilling experiences (achievement of goals), and might be included in the *optimal experience* concept.

Finally, there appears to be overlaps between these athletes' descriptions of clutch and the "Type 2" performance state in the recently proposed Multi-Action Plan model (Bortoli, Bertollo, Hanin, & Robazza, 2012). Type 2 is considered to be optimal yet consciously-controlled state involving nervousness, task relevant focus, and fatigue – as is reported in clutch. However, there are also differences in that Type 2 occurs in a threat state whereas these athletes reported that clutch occurred in a state of challenge which corresponds with the perception of control (e.g., Otten, 2009). Indeed, to be considered optimal (as defined above), it is arguably necessary that the state is experienced as challenge rather than threat – the athlete is challenged to perform under pressure; and threat appraisals are, by definition, negative. Hence, the present findings demonstrate similarities with Type 2 performance, but that athletes qualitatively report important differences which warrant further investigation.

### Limitations and future directions

Strengths of this study include the athletic levels represented in the sample and the steps taken to ensure trustworthiness. However, there are a number of potential shortcomings that readers must consider in their interpretation of study findings. First, even though follow-up interviews were conducted with three athletes to ensure an accurate representation of the athletic experience, the use of two time-points for all athletes might have offered valuable insight into how clutch states relate to more standard (or choking) pressure responses. Second, we were unable to explore all potentially important information related to clutch states, and other important themes might include their inhibition, and possible restoration. Third, we are unable to generalise our findings beyond the current population of athletes. Whether clutch states are experienced the same way in other performance contexts (e.g., academia, the military, dance, or work) remains unknown. Last, we have presented our collective interpretation of the data, and it remains unknown whether other researchers might have coded responses differently or formed alternative conclusions.

Should these findings be verified independently, they could have implications for athletes, coaches, and sport practitioners. For instance, it may be useful for athletes to understand the processes underlying clutch states as this might enable them to induce or prolong the experience when necessary during performance. In particular, it may be important for practitioners to discuss occasions when

conscious control can be *useful* during performance – moving beyond previous suggestions that optimal performance is automatic. Future qualitative research should strive to minimise the delay between event and interview even further (e.g., by conducting interviews within 24 h of events). We recommend future research begin to develop measures for clutch performance in order to examine these states using quantitative analyses. We also recommend experimental work that seeks to explore practical techniques that might help to induce, and maintain/prolong clutch states (e.g., through self-regulation strategies).

### Disclosure statement

No potential conflict of interest was reported by the authors.

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