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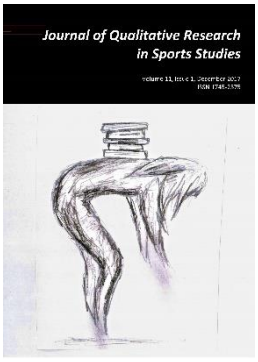


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# Barriers and facilitators to overcoming mental block in springboard and highboard diving

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# Barriers and facilitators to overcoming mental block in springboard and highboard diving

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Keywords: *Highboard diving, self-efficacy, mental block, elite performance*

## Abstract

Mental block can be a significant psychological challenge for many springboard and highboard divers. Consequently, this study investigated the barriers and facilitators to overcoming mental block in these performers. Three former elite divers engaged in reflective interviews to discuss their experiences of mental block. Four barriers (emotions, loss of control, poor coaching and physical sensations) and four facilitators (preparatory skills, team mates, good coaching and cognitive skills) emerged from analysed transcripts. Findings from the current study suggest a link to self-efficacy theory as a potential mediator of mental block in diving.

## Introduction

### 'Diving is not just for nutters'

Although diving may seem a bizarre sport to some, the UK has a long tradition of producing outstanding divers. From the flamboyant but technically basic diving seen in the 1908 Olympic Games in London, to the diving master class demonstrated by Jack Laugher and Chris Mears to win gold in 2016 Olympic Games in Rio. However, diving is not as easy as our GB diving stars make it look. Springboard and highboard divers are exposed to a highly competitive, stressful environment, which can often lead to bouts of mental block (Huber, 2016). Mental block has been attributed to many causes, including competition pressure, parent influence, cognitive anxiety and even residual fear of injury (Collins *et al*., 1999; Day *et al*., 2006). Some research has suggested that mental block and the associated effects on motivation could be one reason that athletes drop out of sport (Enoksen, 2011; Heydari *et al*., 2014). The current body of literature suggests that a better knowledge of the barriers and facilitators affecting mental block in diving could help inform coaching practise. An increase in knowledge of mental block in diving could help reduce athlete drop out, as well as potentially improve the performance and wellbeing of the UK's emerging diving stars.


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Mental block, otherwise known as psychological blocking or lost move syndrome, refers to the psychological phenomena where an athlete loses the ability to perform a previously automatic skill (Day *et al*., 2006). Research studies have posited many causes of mental block in a variety of sports, primarily artistic sports as these are where mental block appears to be most prevalent (Bennet *et al*., 2015). The residual effects of injury, intense focus on skill refinement and disruption of an athlete's motor programme have also been proposed as potential causes of metal block in javelin (Collins *et al*., 1999). Another study investigated mental block in gymnasts and suggested negative attributions and emotions could be the cause (Feigley, 2009). Research into mental block in trampolining proposed several potential causes of mental block, which include; fear of the impending move, increased levels of competition, parental and coach pressure, inadequate skill acquisition and anxiety (Day *et al*., 2006). Cheerleading is another sport in which mental block is prevalent - Lawrence (2016) proposed four major themes in relation to mental block in cheerleading; fear of backwards rotation, mind and body dichotomy, fear of performing blocked skills and negative self-belief. Overall there seems to be consistent themes identified in relation to mental block across sports; the effects of emotions, physical sensations, cognitive impact, as well as the wider effects of mental blocks on other aspects of the sufferer's life (Bennett *et al*., 2015). Emotions appear to be strongly linked with experiencing mental blocks, such as irrational fear, anxiety, depression, feelings of stupidity and extreme frustration (Collins *et al*., 1999; Day *et al*., 2006; Rotheram *et al*., 2012). In addition to emotions, there seems to be an effect of past experience, physiological effects and others' opinions on the experience of a mental block (Day *et al*., 2006; Feigley, 2009; Lawrence, 2016), influences are also associated with self-efficacy theory.

Self-efficacy refers to a person's belief in his or her own ability to perform a task or cope with a situation (Bandura, 1977). It is important to note that self-efficacy is concerned with a person's perceptions rather than their empirically measurable ability. Bandura's (1977) self-efficacy theory posits four major influences; mastery experience, vicarious experience, social persuasion and physiological and affective states. Mastery experience is the effect of past experiences on developing self-efficacy beliefs (Bandura, 1986). Vicarious experience is the effect of modelling or watching others on self-efficacy beliefs (Anderson and Campbell, 2015). Social persuasion refers to the effect others have on self-efficacy beliefs. Social persuasion stimuli can come from coaches, parents or peers and even self-talk (Chang *et al*., 2014). Physiological and affective states is the combined effect of physical sensations and emotions on the development of self-efficacy beliefs (Bandura, 1977). More recent research has proposed the splitting of the final influence, physiological and affective states into two separate categories, physiological states and emotional states (Feltz, Short and Sullivan, 2008). The current research in the field of mental block in sport

seems to draw parallels with self-efficacy theory (Bandura, 1977), suggesting that self-efficacy and mental block may be linked.

The proposed causes of mental block appear to link with the influences on developing self-efficacy beliefs. There is limited research that highlights the potential relationship between self-efficacy and mental block (Howells, 2016). Current research in self-efficacy suggests self-efficacy can be a mediator of similar issues such as stress (Cascio *et al*., 2014; Nedeljkovic *et al*., 2013; Yu *et al*., 2015), highlighting the possibility of self-efficacy to be used as a mediator or possibly facilitator to the overcoming of mental block. A study by Maciejewski, Prigerson and Mazure (2000) found that self-efficacy mediated approximately 40% of the effects of high stress events in participants with prior experience of depression. A similar effect of stress mediation using self-efficacy has been found more recently in a sample of young adults (Sawatzky *et al*., 2013). In addition to potentially mediating stress, self-efficacy and self-efficacy based interventions have also been linked with improvements in skill acquisition (Avila *et al*., 2012). In addition the effect of self-efficacy on skill acquisition has been documented in sport specific environments, such as rowing (Anderson and Campbell, 2015) and golf (Palmer, Chiviacowsky and Wulf, 2016). The potential effect of self-efficacy on stress management and skill acquisition suggests a strong basis for applied psychological interventions.

Mental challenges are a large part of springboard and highboard diving (Huber, 2016), which make the sport interesting ground for sport psychology research. Springboard and Highboard diving requires athletes to perform flawless summersaulting and twisting skills from heights up to 10 metres into water with a splash-less entry. Diving is an 'early entry' sport, which is defined as a sport in which specialisation takes place before puberty (Malina, 2010), due to the acrobatic nature and physical requirements of the sport. The average age of an international elite diver in the UK is currently 21 years and national standard competition beginning at the age of 8 years (Amateur Swimming Association, 2016; British Diving, 2016). Existing research in diving is limited, focusing mainly on the physicality of diving (Barris, Farrow and Davids, 2013; Furtner *et al*., 2006; Zimmer, 2003). Some studies have addressed the psychological aspects of diving, most notably Feltz and Mungo (1983) who used diving as a novel task to investigate self-efficacy and Slobounov *et al*. (1997) who explored the effects of mastery experience on diving performance. In addition research by Wang, Ren and Zhang (2008) highlighted the apparent psychological characteristics of Chinese divers, which included motivation, attention, volition, intelligence and emotion before performance. New research has also highlighted the potential use of self-efficacy within diving (Pattinson, Cotterill and Leyland, 2017).

Psychological setbacks and mental block are not uncommon in diving. Tom Daley, British diving's ten metre Olympic star, suffered from lost move syndrome following the Olympic games in London in 2012 (Hart, 2014). In addition, David Boudia, London 2012 ten metre gold medallist from the USA, has reported to use self-efficacy based interventions such as biofeedback, visualisation and meditation to overcome several mental blocks associated with his fear of heights (Brunner, 2016). Also Jack Laugher, the UK 3 metre gold and silver medallist from the Rio Olympic games 2016, has been using expert modelling as a method of supporting and encouraging young divers (Blickenstaff, 2014). The use of self-efficacy as a potential support or applied intervention for mental blocks in diving is an interesting concept. The link between self-efficacy, stress management and skill acquisition suggest a potential basis for the development of an intervention for overcoming mental block in diving. Yet before any intervention can be designed more knowledge is needed into the barriers and facilitators of mental block in diving and any potential links to self-efficacy. The current study aims to highlight the barriers and facilitators for overcoming mental block and any existing use of self-efficacy or associated interventions using reflective interviews with a sample of retired elite divers.

## Method

### Participants

A sample of three retired divers (M age = 26 years) were recruited to participate in the study. All participants had competed at an elite standard at more than one national event, and were no longer involved in competition. All participants had reported suffering from mental block at least once in their diving career.

### Procedure

Participants were recruited by direct email, participation was voluntary, consent was gained and participants were able to withdraw at any time during the study. Before the interview began participants were asked to provide demographic information to record their age, gender and years of diving experience. Semi-structured interviews were conducted via Skype TM due to the availability and commitments of the participants. Existing research in the fields of mental block and self-efficacy was used to develop a set of seven questions written in an ideal open-ended style (see figure 1), designed to encourage discussion around mental block as well as the barriers and facilitators to overcoming mental block in diving.

### The influence of the teacher

Debates about why Physical Education exists in the curriculum, what it contributes to learning and how it should be facilitated are both complex and dynamic. Nevertheless, teachers have a responsibility to engage in such debates and to deliberate the future directions of Physical Education (Penney and Chandler, 2000;

Sprake, 2014). Teachers' perspectives about the role of Physical Education vary significantly (Green, 2008), however, and this has inevitable and significant implications for pupils' learning experiences. For instance, in a damning vignette about his Physical Education experience, one student recently recalled how his class were forced to play rugby on the frozen ground in winter months and recalled the backlash for suggesting an alternative educational experience:

1. Describe an experience when you struggle to perform a dive?
2. What was the main reason you struggled to perform the dive?
3. What physical feelings did you experience at the time?
4. How did you feel emotionally?
5. How did you get over those feelings?
6. Who inspired you during that time?
7. How do you think your social support system affected your diving at this time, for example coaches, parents or peers?

**Figure 1: Interview Questions**

Interviews were followed an established reflective methodology used in similar studies in other sports (Samson, 2014; White and Bennie, 2015), meaning participants were discussing their own past experiences of diving as a youth such as experiences of mental block or coach interactions.

**Data analysis**

All interviews were recorded using a SkypeTM and transcribed ver batim. The same researcher conducted all three interviews. Transcripts were analysed and interpreted using abductive reasoning by the primary researcher and an independent coder (Gale *et al*., 2013). Abductive reasoning, (also called abduction, abductive inference, or retroduction) is a form of logical inference which starts with an observation then seeks to find the simplest and most likely explanation. In abductive reasoning, unlike in deductive reasoning, the premises do not guarantee the conclusion. The interview transcripts were analysed using thematic analysis with open coding, this analysis has been used in other qualitative studies in diving (Pattinson, Cotterill and Leyland, 2017). Transcripts were annotated, and then meaning units were developed from the original annotations, followed by similar meaning units being grouped into themes. These were lower order themes, grouped and categorised to identify major themes from the data. The second independent coder, who was familiar with diving, then analysed the transcripts using the same process and was not privy to the original analysis. Data were collected using interview transcripts, and researchers reflective comments. The triangulation of different sources of the data helps to reduce bias and the possibility of missing important data.

## Results

The current study highlighted both barriers and facilitators to the overcoming of mental block in diving. Four higher order themes were identified in relation to the barriers to overcoming mental block in diving: emotions, loss of control, poor coaching and physical sensations. Four higher order themes were also identified in relation to the facilitators to overcoming mental block in diving: preparatory skills, team mates, good coaching and cognitive skills. For reader's clarity each higher order theme is presented separately. Full details of all lower order themes can be found in figure 2 and 3, along with an indication of the amount of participants who mentioned each theme in brackets.

### Barriers – 'Why can't I do this dive?'

'I'm just too emotional!' The first major barrier highlighted by the participants was the effect of emotions. The three participants mentioned eleven different emotions in total. The most frequently mentioned emotions were fear and frustration. All three participants felt that fear was the root of their mental block, when asked what they thought caused their mental block, two of the participants responded immediately with the word 'fear'. All three participants, in quite similar contexts, mentioned frustration. One participant highlighted frustration as a major barrier to their diving, 'I used to get so frustrated, that was the main problem with me, I would get so frustrated'. Another participant mentioned that they felt frustration played a large part in their emotional reaction to mental block, 'frustration was the biggest one, because you know you can do it but you get annoyed with yourself that you're not actually trying it'. Other more extreme emotions were also mentioned including self-hatred, '… beating myself up outside the pool', and embarrassment '… you're going to look silly'. Another point that was made by one diver was that removing themselves from the situation was the only way he/she could cope with their emotions, 'the best thing that worked was quitting diving for three years'.

### 'I'm out of control!'

The second main theme identified was loss of control, which is made up of four lower order themes; poor landings, loss of spatial awareness, unknown outcomes and interruption of thought process. All three participants highlighted that a loss of control fed into their mental block and was a barrier to overcoming it. Participants mentioned that the root of mental block could come from poor quality landings, which are known in diving as 'splats'. The participants recounted times they had experienced poor quality landings, which had caused injury, 'I landed on completely flat on my front and hurt myself quite badly and was sick because of it' and 'I landed flat on my back, I don't know how I managed it'. One participant also mentioned that they experienced a sudden loss of spatial awareness, 'I just completely lost where I was' which feed into their feelings off a loss of control. The more abstract concept of an unknown

outcome was mentioned, suggesting that not knowing the outcome of a new skill causes a level of anxiety that feeds into mental block, 'the main thing that stopped me learning new dives was being scared of not knowing what was going to happen when I tried a dive for the first time'. The fourth lower order theme mentioned within the category of loss of control was the interruption of thought processes. Interrupted thought processes was mentioned by the youngest participant, who struggled to articulate how they felt at the point of mental block and described not being able to think as they normally would, 'I couldn't even work out how to do it anymore, it was definitely a mental block because I couldn't think it through anymore'.

**'Blame the coach'**

The third higher order theme identified in the transcripts was poor coaching, which consisted of five lower order themes; lack of attention, rushing the diver, lack of variety in coaching style, lack of diving knowledge and lack of belief in the coach's ability. One participant mentioned that the lack of attention from their coach caused frustration and affected their diving progression, 'Sometimes when I didn't get comments after a diving I would get so annoyed because he was concentrating on other people and there was just no balance'. Another participant mentioned their coach would rush them to try new skills and not adjust the coaching styles to help overcome mental block, 'Rushing through one method of doing lead ups, one approach to lead up as appose to say putting me in the gym or a rig or various things like that'. Two participants mentioned their reluctance to try new skills was affected by their coaches diving knowledge, 'I just felt she didn't know enough about diving and I sometimes felt like I know more than she did and she was supposed to be coaching me'. Also a lack of belief in the coach's ability to coach was highlighted as a cause of anxiety by the participants, 'another coach who is supposedly a high level coach, I just didn't get on with and didn't believe they were very good at coaching so I didn't progress and I found learning new dives with that person exceedingly scary'.

**'My body feels funny'**

The final higher order theme highlighted as a barrier to overcoming mental block in diving was physical sensations. Participants highlighted several different physical sensations they felt held back their diving progression; muscle spasms, sickness/nausea, lethargy, dizziness and pain. Two participants mentioned experiencing muscle spasms and shaking while trying to learn new dives which they felt contributed to their mental block, 'the biggest one was legs shaking, my muscles would start twitching back and forth, my knees would go weak and that's when you lose parts of your strength in your muscles'. Participants also mentioned feeling sick when attempting new dives, 'stood on the board and you are so nervous, I don't think you would ever be sick but you feel sick'. Another physical sensation mentioned was pain, one participant mentioned feeling physical pain while experiencing mental

block, 'If I didn't go for a dive I would feel physically in pain'. Lethargy and dizziness were also mentioned as contributing factors to the inability to attempt new or previously automatic skills.

**Barriers**

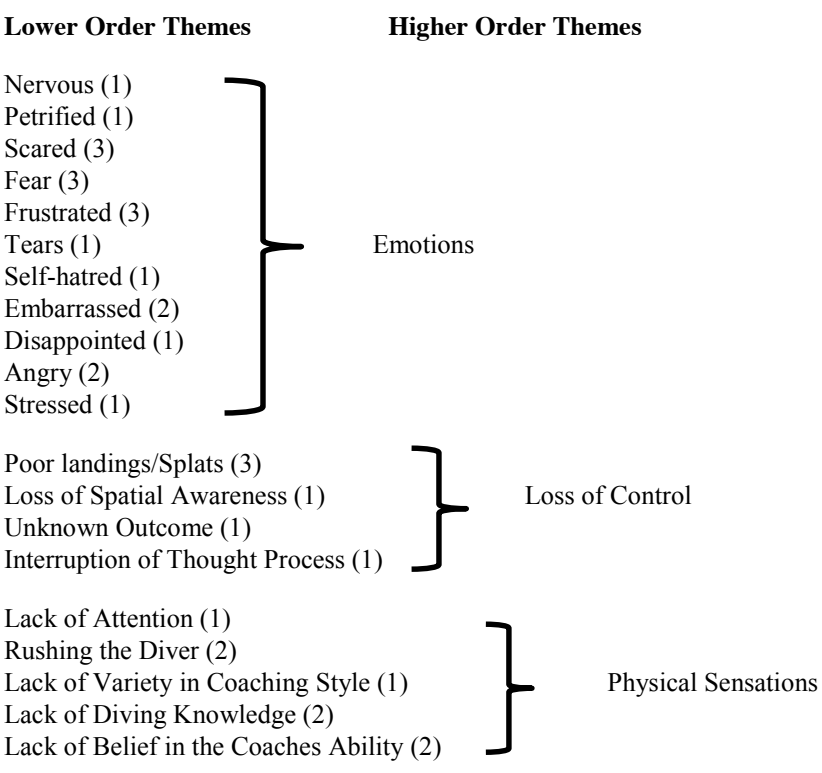


**Figure 2:** Barriers to overcoming mental block in diving.

**Facilitators – 'That really helps!'**

**'Just one more lead up!'**

One main facilitator mentioned by all three participants was the use of preparatory skills, known in diving as 'lead ups'. Participants mentioned feeling better and more prepared for new or lost skills after going through a progression of lead ups, 'There is a bit of an adrenaline rush from wanting to do it, doing the lead ups for it and wanting to do it, then just going for it'. The participants also mentioned wanting to do more and more lead ups, 'I would always want to do more lead ups than necessary to convince myself I can do it'.

**'It's all about the team'**

Another higher order theme that emerged from the transcripts was the facilitating effect of teammates and other divers, which encompasses four lower order themes:

good company, encouragement, healthy competition and emotional support. Participants mentioned that teammates offered good company, which made diving a more enjoyable experience, 'I grew up diving with one of my best mates, me and (my friend) are still so close now, so that helped me so much'. Another area that was mentioned frequently was healthy competition. All three participants mentioned that their team mates progression furthered their own progression, 'There's a competition inside you, you want to not loose even though it's not a competition, just you can't lose that little fight'. Another participant mentioned that once the friendly competition element of their training environment had gone it was more difficult to try new dives, 'I am very competitive driven, even if it just means doing the dive better or first, once that went the motivation for doing new things dropped off'. The participants also mentioned how team mates offer encouragement and social support, yet the wide age range of diving teams sometimes made this harder, 'When all the new generation came through they were all so young and having someone your own age makes it so much better, it's hard when you are the oldest'.

**'Give the coach some credit!'**

Another facilitator mentioned by all three participants was the positive effect of their coaching staff on their diving development and the management of their mental block. Four lower order themes were combined to create the higher order theme of good coaching: coach's experiences as a diver, trust, expert knowledge and emotional support. One participant highlighted that their confidence in their coach came from the coach's experiences as a diver, the participant felt this meant the coach understood the process and emotions behind diving and mental block, 'I knew he had been there, he had done diving, he understood how I felt and how I worked'. Another participant mentioned that trust played a large role in the relationships formed with a coach, 'some coaches have got a massive amount out of me and I have masses of respect for them … I would trust whatever he said and it worked every time'. Others also mentioned the emotional and social support offered by their coaching staff that helped with their progression, 'there were lots of occasions that they would be really supportive and positive and that was the reason I would go for a dive was through their motivation'.

**'Just visualise it'**

All three participants mentioned several different cognitive skills and taught psychological interventions they relied upon during their competitive diving career. Four lower order themes were combined to develop the higher order theme of cognitive skills: visualisation, modelling, self-talk and adapting equipment. Visualisation is the process where an athlete is encouraged to imagine themselves completing the skills or exercise perfectly and aim to use all their senses to create an

immersive experience. Visualisation is used in diving and one participant mentioned that learning visualisation was the turning point in their diving,

> Being taught how to do visualisation was really good. It meant I could prep it throughout the day, everyday of the week, and think about how it should be done so that when I came to do it all, I was thinking about the right way to do it as opposed to the wrong way.

Another cognitive skill mentioned was modelling. Modelling refers to the practise of an athlete watching others to gain experience and confidence in their own ability. Participants mentioned that modelling played an intrinsic part in their diving development. Some participants mentioned modelling elite and famous divers, 'When we used to go and complete in leeds and see some of the top athletes, like Rebecca Gallentree, I would just watch them train … that definitely inspired me so much' and 'Pete Waterfield really inspired me, Leon Taylor did'. Yet other participants mentioned that modelling athletes their own level helped them to develop, 'the (divers) in the group I was diving against a lot of the time, being mid to lower half of the table makes you want to be better. You are constantly seeing them and they are advancing a lot'. Some participants mentioned the use of self-talk as a way of overcoming their mental block in relation to dives, 'I start swearing at myself, and swear a lot and remind myself its only pain'. Other mentioned how they would adapt their training environment or equipment to allow them to progress, 'I just went up on 1 metre and did it because it was just too hard on poolside', by using a higher board the participant managed to complete a skill they previously had not managed to successfully perform.

## Facilitators

| Lower Order Themes | Higher Order Themes |
|---|---|
| Felt Better after lead-ups (3)<br>Wanted to do more lead-ups (2)<br>Physical Preparation (1) | Preparatory Skills |
| Good company (2)<br>Encouragement (3)<br>Healthy competition (3)<br>Emotional support (1) | Team Mates |
| Visualisation (1)<br>Modelling (2)<br>Self-talk (2)<br>Adapting equipment (1) | Cognitive Skills |

**Figure 3:** Facilitators to overcoming mental block in diving.

**Discussion**

The current study aimed to contribute to the current knowledge of psychological effects on diving performance by investigating the barriers and facilitators to overcoming mental block in diving. Four main barriers and four main facilitators emerged from the transcripts of detailed reflective interviews with three former elite divers. The identification of existing barriers and facilitators to overcoming mental block in diving supports the assertion that mental block is present in diving, which further ratifies the existing literature in the field (Brunner, 2016; Huber 2016; Pattinson, Cotterill and Leyland, in press). The current study also reinforced the assertion that mental block could be a cause of sports drop out (Enoksen, 2011; Heydari *et al*., 2014). Participants in the current study mentioned emotions such as frustration and fear at great length, which have been linked to mental block (Bennett *et al*., 2016). The apparent link between mental block and drop out was seen clearly when one participant in the current study mentioned leaving the sport as a method of overcoming their emotions caused by mental block.

The current study also supports the proposed causes of mental block posited by existing research (Bennett *et al*., 2016; Day *et al*, 2006; Lawrence, 2016). The barriers to overcoming mental block highlighted in the current study were; emotions, loss of control, poor coaching and physical sensations. Existing research by Day *et al*. (2006) posited emotions and coach pressure as some of the main causes of mental block in sport, which link closely with the themes of emotions and poor coaching highlighted in the current study. Another study by Lawrence (2016) proposed a mind and body dichotomy could be a major cause of mental block, the theme of loss of control highlighted in the current study is similar to a mind and body dichotomy. Participants mentioned conflictions between their emotions and their physical reactions, which further support Lawrence's (2016) findings. Physical sensations were also suggested as a potential cause of mental block by Bennett *et al*. (2016), which was further reinforced by the findings of the current study.

The themes highlighted in the current study also suggest a link to Bandura's (1977) self-efficacy theory. Parallels can be drawn between the use of preparatory skills and gaining self -efficacy thought mastery experience. The facilitators of team mates and good coaching, along with the barrier of poor coaching can all be associated with the self-efficacy factor of social persuasion. Finally the barriers of loss of control, emotions and physical sensations are all very similar to the influences of emotional states and physiological states described in self-efficacy research (Feltz, Short and Sullivan, 2008). The current study provides further support for the use of self-efficacy within a diving context. In addition, the description of cognitive skills such as visualisation and self-talk being used to mediate fear and anxiety, further identifies

the potential for self-efficacy to be used as a mediator to diving related stress (Cascio *et al*., 2014; Yu *et al*., 2015).

## Conclusion

The current study has taken an initial glance into the potential psychological impacts of springboard and highboard diving on the athlete, and offered up potential barriers and facilitators to diving performance and skill acquisition, which warrant further investigation. The current study has opened the door for further research to investigate the barriers and facilitators to diving performance and the overcoming of mental block in differing ages and ability levels. Yet despite this minor limitation of the current study, the results offer a new angle for potential research in diving psychology. The use of cognitive skills such as visualisation and self-talk appears to be in its infancy within a diving context, further research should aim to enhance the use of these self-efficacy based interventions for possible performance enhancement and wellbeing development.

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## Reviewer Comments

This was paper was really enjoyable and well-written. I found the text to be clear and concise, with definitions and explanations for what could be quite complex ideas put forward in an engaging and accessible way. The paper stimulated thought and reflection on the broader application of the ideas presented for other sports and activities. In particular, although on the face of it not closely related, it encouraged me to question my own practice when supporting students who may experience mental blocks in their academic studies, especially when it comes to formally assessed written work, but also less formal activities requiring greater independent thought and creativity. A key takeaway in this article was the importance placed on self-efficacy and its potential to reduce stress in performers – the authors make a good case for its use, grounded in classic theory like Bandura's work. I was left wondering to what extent our contemporary systems and processes for 'educating' young people and athletes (as well as society at large) has this worthy focus embedded within them? Or whether they in fact they might actually reduce the likelihood of it emerging? Thank you for the food for thought.