Strategies for Preventing Psychological Choking in Youth Sport

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The basketball player throws up a "brick" at the last second of the game when the shot determines who wins or who loses. A tennis player with a commanding lead in the final set falters and allows an inferior player to "steal" the match. An elite soccer player's penalty shot in a shootout after overtime in the finals sails many feet over the top of the cross bar. All of these reflect what is commonly referred to as a "choke" in high level sport.

What is choking? It is not simply losing a winnable game. Nor is it performing poorly on a newly learned skill, a phenomenon quite common in youth sports. It is performing ***significantly*** worse than expected given one's skill level despite a desire for a superior performance in the presence of substantial incentives. It is more than an impaired performance. It is the process that leads to that impaired performance; e.g., being distracted when thinking of the consequences of that performance (Weinberg & Gould, 2015, p. 381). Choking may be caused by two totally different, but not mutually exclusive mechanisms – a) distractions which use up a limited amount of cognitive resources or b) unnecessary self-focused analysis of an already well learned skill (Hill, Hanton, Matthews, & Fleming, 2010).

Distraction Theories suggest that pressure-induced anxiety such as thinking of the consequences of success or failure becomes a second task that uses up one's limited capacity short term memory, the memory that controls selective attention. This additional task overwhelms the working memory disrupting the performance, a disruption which cannot be overcome with increased effort alone. Processing two tasks simultaneously (i.e., thinking about the consequences as well as thinking about the skill) results in inefficient information processing relevant to successfully completing the task.

Self-Focus Theories, on the other hand, propose that performance anxiety increases athletes' self-consciousness, causing them to explicitly monitor what would otherwise be a well-learned, automated set of motor skills. The purpose of the increased monitoring is presumably to control individual components of the skill. This shift in attentional focus results in two potentially negative outcomes: First, the previously automated skill becomes many steps, each of which becomes an additional opportunity for errors. Under pressure, the skill, which had previously been a unified whole, reverts to a novice-like stage where it consists of multiple, interlinked tasks. **Fragmenting** the previously automated skill into more components may be the most useful explanation for simple, primarily physical skills. Second, the automated skills which previously required little or no thinking now returns to a more primitive stage of learning requiring once again short-term memory processing which is slower and of limited capacity resulting in diminished performance. **Explicit monitoring** via short-term memory might be a better explanation for complex, cognitive, decision making tasks because of the limited capacity of our short-term memory.

Performance decrements based upon self-focus may result simply because self-monitoring is a second task taking up more short-term memory or such decrements may occur because the monitoring is part of your overt attempts to control the execution of skills. Thus, choking may result from two different but related mechanisms: a general disruptive effect on performance from having to do two or more things at once or from overt attempts to "over control" the elements of the skill itself resulting in slower, less efficient processing of the task.

In the nonsporting world, tasks, such as math problems, which place extensive demands on short-term working memory are substantially disrupted by distractions (Beilock & Carr, 2005; Beilock, Kulp, Holt & Carr, 2004). Similar disruptions occur for sport tasks that rely heavily on decision making; however, most well-learned sport tasks tend to have become automated and are unlikely to be processed via working short term memory. Such well learned skills are highly resistant to disruption due to external distractions (e.g., crowd noise) but are more susceptible to disruptions caused by increased self-focused monitoring (Hill, et al., 2010, Lewis & Linder, 1997; Masters, 1992).

With high-level performers, evidence supports the self-focused mechanisms of choking over the distraction mechanisms. Beilock, Carr, MacMahon and Starkes (2002) studied elite golfers and veteran soccer players. Veteran golfers were asked while putting to determine if a distracting tone was a high or low pitch. Their putting performance was essentially unaffected by this secondary, distracting task. However, when they were asked to explicitly monitor their putting performance (e.g., by calling "stop" at the end of the golf stroke), their putting performance substantially declined. These findings were replicated in a similar study where expert soccer players were asked to dribble a soccer ball while attending to an external tone (was it high or low?) or monitoring the act of dribbling (what side of the foot touched the ball?). Attending to the tone (distraction) had little disruptive effect while monitoring the dribbling technique (self-focus) significantly slowed the dribbling speed and lowered efficiency. Gray (2004) performed similar studies of disruption and self-focus with batters in baseball but simultaneously manipulated pressure by having the batting skill performed in front of an evaluative audience or no audience. Under pressure, the distraction task had no disruptive effect with expert players but self-focused monitoring produced a substantial decline in performance.

Similar studies with novice performers found the opposite results. Attending to a second external, unrelated task (identifying a high or low tone) substantially disrupted putting and dribbling. Focusing on specific elements of the task itself (self-focus) such as when the putting stroke stopped and which side of the foot contacted the soccer ball had no disruptive effect on the sport skill performance. (Beilock, et al., 2002).

Thus, low and high **skill levels** produce opposite effects. Novices are more likely to choke when distracted by additional tasks because they need more of their limited short-term memory capacity to process task relevant information. They have not yet automated the skills. Choking occurs because the second task occupies crucial memory capacity necessary to make executive decisions. On the other hand, self-focus with novices is consistent with their conscious effort to learn and execute the task and, thus, typically results in little or no performance decrement. Skilled athletes, on the other hand, no longer need substantial short-term memory capacity so they appear relatively immune to additional

distracting tasks but are prone to disruption if they revert to self-focusing strategies on well learned skills.

However, even veteran athletes require executive decision making when attempting complex skills. Their short-term memory capacity can be insufficient on complex tasks when confronted with distractive tasks because the decision making required by complex tasks is less automatic and, therefore, less protected from the increased demands of the additional distracting tasks.

Effective interventions to alleviate choking:

Interventions are of two types: First, coaches and athletes can adopt strategies during the initial learning and practice sessions which reduce the likelihood of choking occurring later during pressure situations. Second, strategies can be implemented at the point of pressure where choking is likely to occur. At this phase of our understanding of the phenomenon of choking, some interventions have had empirical support from research studies and some have developed as a result of applied coaching techniques where coaches and athletes have had success overcoming previous choking experiences.

Strategies for the Learning/Practice Phase:

1. Skills learned implicitly appear to be resistant to choking (Masters, 1992). **Implicit learning** refers to learning "without intention and in a way that results in knowledge that is difficult to articulate." (p. 32). Coaches refer to such learning as learning "by feel." Because the skill has been learned without explicit steps or specific rules, there is no ability of the athlete to self-focus when confronted with a pressure situation. Therefore, such a process cannot contribute to choking. However, implicit learning has not been enthusiastically adopted by coaches because implicit learning typically takes place more slowly than explicit learning (Maxwell, Masters & Eves, 2000) and fails to provide coaches with strategies to teach the skill in the first place. However, it is a great reason to simply let kids play!

2. **Practice performing in stressful situations with real negative consequences for failure.** Practicing under pressure simulations, even pressure that is mild compared to the actual event, helps significantly to inoculate athletes from choking in actual pressures situations. Perform before an evaluative audience. Have gymnastics judges actually score a gymnast's routine in simulated competitions. Shoot a single foul shot after a wind sprint where a successful shot provides you with a rest while a missing shot requires that you – and perhaps your teammates – continue to run through stressful conditioning drills. Attempt "five in a row" where each successful attempt permits you to continue but a single miss ends your opportunity to continue. In soccer, have each athlete "bet" how many conditioning drills they are willing to do if they miss the penalty shot from the 12 yard line[1]. Look for and use naturally occurring pressure situations in practice. The more you are successful in actual pressure situations, the more you will have faith in your ability to perform under pressure. It is one thing to believe that you can perform well under pressure because others, such as your coach and your teammates, tell you

[1] Too high or too low a bet reveals a lack of confidence that they can, in fact, make the shot.

"You can do it!" It is quite a different matter to have absolute faith in your ability to perform under pressure because you can say to yourself after having successfully performed under pressure in practice that "I did it!"

3. The use of **visual imagery** to place the athlete in pressure packed situations normally unattainable except in an actual championship match has long been recommended by experienced coaches. Competing in the Olympics – even for those talented enough to obtain such success – is still a "once in a lifetime" occurrence for most. To the extent that imagery can anticipate and realistically produce such a pressure-packed situation, it can be an antidote to choking in such rare but potentially life changing, competitive situations.

4. **Practice with actual distracting events present.** Coaches have long attempted to intervene to prevent choking by **practicing under distracting conditions.** Play pre-recorded loud crowd noises in spectator sports over a loud speaker when performing a well-learned skill. Shooting foul shots in practice while "opposing fans" heckle the shooter from the bleachers behind the basket in practice is still another. Make the distracting event as specific as possible to events that are likely to happen in actual competition. If the opposing coach in competition is likely to call a time out just before your place kicker attempts a field goal in football, practice calling delays just before the kick – or the foul shot in basketball in scrimmages and practices. You get better at whatever you practice. The more specifically you simulate game-like pressure situations, the more likely that your athletes will thrive rather than falter when they encounter such pressure.

5. **Practice focusing on "what to do" rather than "what not to do."** "Straighten your knees" on the back handsprings rather than "Don't bend your knees." "Go for it" rather than "Don't miss." Such strategies develop the habit of focusing on what to do rather than on what not to do. Focusing on what to do is a major component of the skill of "staying in the moment."

6. **Re-interpret prior failures as stepping stones to success**. John Wooden, the world famous basketball coach at UCLA, referred to mistakes as the "building blocks for success" (Wooden & Carty, 2005). Extend that approach to crucial mistakes in pressure situations. Instead of labeling one's self as a choker, try to determine what you can learn from a failure. One characteristic of mental toughness is to recover from a mistake. It appears harder to perform well after an early error than to continue to perform well when you are already in a flow state.

7. **Analogy learning** has also resulted in resistance to choking under pressure. Analogy learning uses biomechanical metaphors to teach complex actions. For example, when teaching a novice to hit a backhand in racquetball, the athlete might be told to swing "as if brushing dust off a long, low bench." Analogy learning differs from implicit learning because in analogy learning the athlete intends to learn the skill while in implicit learning there is no such intent. Both Implicit and Analogy Learning are likely to be questioned by coaches because they typically prevent athletes from self-correcting technical errors because there are no explicit guidelines for

performing the skill. Further, such techniques are of little value to athletes who have already mastered the skill via explicit learning.

8. Develop ritualistic **pre-performance routines.** Rituals to protect performers from distractions and over-analysis. For example, a tennis player on her serve may step to the line, bounce the ball three times, toss and serve in the same rhythmic pattern as used for serving in practice, in normal competitive situations and for the critical serve in the championship match.

9. Finally, a variety of psychological training techniques have received empirical validation of their positive impact on sport performance (e.g., imagery, overlearning, conditioning, efficient techniques – to mention only a few). Whether these techniques are equally effective with individuals who are prone to choking is yet to be empirically determined. However, such peak performance training strategies are a logical approach to preventing choking.

Strategies for the Crucial Moment Phase:

1. **Don't slow down.** Proceed quickly without rushing just as you would in a less pressured situation. Athletes who choke typically take extra time in preparing for the "big movement" presumably to overthink or overanalyze what should be an automatic, well-rehearsed skill. Step up and "just do it"

2. **Focus on the outcome, not the "how to…".** See the ball hitting the back of the net in soccer or hear the golf ball rattle at the bottom of the cup. Feel the back handspring landing securely on the balance beam. See the basketball ripping through the cords of the net. Avoid thinking differently about executing the skills than you normally would in a less pressured situation. Focus on what you want done rather than how to do it.

3. **Used generalized, global key words** that emphasize the entire continuity of the skill. Say "smooth" during a golf stroke. Think "power" during a tumbling run. Say "strong" during a soccer penalty kick. Say "stretch" during the follow through of a basketball foul shot. Such words or thoughts help "keep you focus on the end result rather than the step-by-step processes" (Hill, et al., 2010, p. 232) of your performance. The use of **"process cues"** has been found to reduce choking. Focusing on cues that promoted a generalized "feel" for the skills appears to result in better performance under pressure than a focus on specific technical steps of executing the skill. The enhanced performance may result because the process cues prevent self-focus (Jackson, Ashford, & Norsworthy (2006).

4. **Stay in the moment.** Past and future performances are irrelevant. They are distracting events. Think of what you want done – not how you're going to do it – and then do it!

5. **Avoid saying "Don't think about errors.**" Say "Putt firmly" rather than "don't leave the putt short." Thinking about missing directs one's thoughts to missing.

6. **Use distractions with highly learned skills.** Paradoxically, distractions can actually help high level performers who have mastered executing skills automatically even though such distractions typically lower the performances of novices. Distractions which are consistent with the skill yet not overly involved with analysis of the skill components. Focusing on the catcher's mitt (the target) rather than the sequence of movements involved with throwing that ball can actually help a pitcher throw strikes in a pressure situation.

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