

CLINICS IN SPORTS MEDICINE

The Sport Psychiatrist and Golf

Terrence P. Clark, MD^a, Ian R. Tofler, MB, BS^b, Michael T. Lardon, MD^{c,*}

"Department of Psychiatry and Behavioral Sciences, James H. Quillen College of Medicine, East Tennessee State University, 52 Dogwood Lane, Mountain Home, TN 37684, USA

olf is a mentally challenging game. The sport psychiatrist knowledgeable in the game of golf is well-positioned to consult to competitive golfers. Golf is the only sport in which practice and competition take place in different environments: the practice range and the golf course. Additionally, no other sport has world-class, top-30 players ranging in age from 19 (Sergio Garcia, 1999) to 50 (Jay Haas, 2005). This broad age range speaks to the fact that aging world-class golfers can compensate for physical deterioration with mental maturation. Most significant, however, and warranting the authors' discussion here, are issues of time management.

The sport of golf is uniquely challenging because its duration, interrupted pace of play, and excessive amount of idle time make the competitor vulnerable to external and internal distracters [1,2]. A golf round of 18 holes takes 4 to 5 hours to play, weather permitting. A golf swing lasts only about 3 seconds; thus the professional player swings the club for a total of about 3 1/2 minutes in an entire 4 1/2-hour round! The pre-shot routine takes about 30 seconds, resulting in the professional golfer having greater than 3 1/2 hours of idle time during the heat of competition. This excessive down time can lead to obsessive thinking and distraction, as well as amplification of pre-existing negative self-perceptions, performance anxiety, panic, and affective overarousal [1,2].

To perform well, competitive golfers must have a trustworthy pre-shot routine, as well as other strategies to deal with these inevitable distracting thoughts, emotions, and doubts. They also need a sound psychological and philosophical belief system contextualizing the meaning of winning and losing.

The ultimate reason many, but not all, people play games is to win. On the golfing circuit, a competitive golfer rarely wins most of his tournaments. Stuart Walker [3] contends that it is even more difficult to win if a player is investing

^bCharles R. Drew University of Medicine and Science/University of California, Los Angeles, 1731 East 120th Street, Los Angeles, CA 90059, USA

^cDepartment of Psychiatry, School of Medicine, University of California at San Diego, 3750 Convoy Street, #318, San Diego, CA 92111, USA

^{*} Corresponding author. E-mail address: drlardonsoffice@cox.net (M.T. Lardon).

his sense of self-worth or ego in the outcome. He contends that playing a game for narcissistic or ego purposes is "playing a game within a game" [3]. A more mature competitive philosophy is to play to win, yet to at the same time to acknowledge that losing is a possibility. This competitor enjoys matching his expert skills against other highly skilled competitors, and can derive pleasure from the process of performing well, even without always winning.

Renowned golf teacher David Leadbetter [4] comments that golf is like "mental chess," and that the mental component is possibly the toughest part of playing golf. The mental chess of golf is the challenge of how well a player focuses on the shot at hand, rather than being taken off-task by thoughts, emotions, or poorly controlled physiological arousal.

The protracted pre-performance time can lead the athlete to experience potentially counterproductive cognition, such as overevaluating the importance or risks of the next shot [1,2]. This in turn may lead to self-doubt and fear of failure. At times of heightened pressure in competition, an athlete may experience difficulty ridding his mind of negative thoughts. These thoughts can lead to impaired performance, including the athlete doing exactly what he is trying to avoid [5,6]. Examples are a basketball player trying not to throw a second air ball from the free-throw line in basketball and doing just that, or a golfer trying not to hit a ball into a water hazard and then doing so. Wegner [5] theorized that such behavioral enactment represents an "ironic process." Alternatively, Beillock et al [7] demonstrated that trying not to imagine landing a ball short results in an increased incidence of hitting the ball long. Thus, ironic processes may not just result in enacting the unwanted action, but may lead to overcompensation. The sport psychiatrist can help the athlete interrupt ironic processes by first recognizing when they occur, and then developing strategies to lessen cognitive and emotional overload. Prompt and effective management allows the golfer to attend to the task of preparing to hit his next shot [5,6].

Confidence and trust are the cornerstones to succeeding in competitive golf [7]. The study of confidence is best described by Albert Bandura's work on self-efficacy [8]. Confidence is a state of mind marked by freedom from uncertainty coupled with a sense that a desired task will be accomplished. Confidence is based upon one's past experiences and performances. It is also dependent upon vicarious experience, good preparation, and established, solid routines. A competitor rediscovering confidence based on vicarious experience is exemplified by the experience of Rich Beem, who in 1995 had quit playing golf and took a job selling cell phones in Seattle. In 1996 Paul Stankowski, with whom Beem had competed in college, won the Bell South Classic. An inspired Beem felt that if Stankowski could succeed, he could certainly do it as well. Beem has since won three Professional Golfers' Association (PGA) Tour events, including the 2002 PGA Championship [9].

THE PRE-PERFORMANCE ROUTINE

A consistent pre-performance or pre-shot routine is essential in sports activities that are self-paced, such as competitive golf, target shooting, or shooting free

throws in basketball [1,2]. Such a routine can help the competitive golfer's resilience under pressure. He can invest his attention in a well-established pre-shot routine rather than allowing distractions such as thinking about the importance or prestige of a tournament. This permits the competitor to access a cognitive, emotional, and psycho-physiological state that optimizes his chances of hitting an excellent shot. Once confidently settled by his pre-shot routine, the elite golfer customarily imagines the shot, focuses his attention on a relevant external cue or thought, executes with a quiet mind, and then evaluates the quality of the execution [2]. This structured approach enables the performer to stay well-focused, or sometimes to approach or remain in a state of "flow" or "the zone."

Elite athletes, including golfers, often describe their best performance as being "in the zone" [10,11]. Flow [12] is a research-verified state that is closest to the phenomena of playing in the zone in sports or other activities [12]. Flow is a state experienced in a task-oriented activity. The individual may experience a sense of absorption, loss of self-consciousness, an almost dissociative detachment, power, pleasure, altered perception of time (usually slowing), and a sense of control and unity.

Researchers at the University of California, San Diego (UCSD) and Scripps Research Institute [13] hypothesized that the zone state may be a manifestation of an adaptive dissociation, and that similarities exist between the zone, hypnosis, and dissociation. They characterized the athletic zone as having four essential components: (1) enhanced attentional focus, (2) time slowing, (3) sense of detachment, and (4) super-normal performance. They define enhanced attentional focus as consisting of multiple cognitive components, including general alertness and the ability to sustain and select where attention is directed. They conceptualize dissociation as a mental separation of components of experience which would normally be processed together that is seen in trauma and in highly stressful situations, as well as in some psychiatric disorders. Hypnosis is defined as an enhancement of focal concentration with suspension of peripheral awareness. Its components include absorption, which is the tendency to become fully involved in a perceptual experience, and suggestibility, which allows heightened responsiveness to the environmental stimuli. The researchers noted that hypnosis has been used as a model for dissociative states. Neuroelectric measures, such as electroencephalography (EEG) and eventrelated potential (ERP) techniques, have been used to assess these phenomena, with findings that suggest that the same attentional mechanisms are affected by hypnosis and dissociation [14]. Given these relationships and the clinical observation that certain individuals may inherently be more susceptible to dissociative states, they hypothesized that the zone, in the context of athletic performance, could be measured by neuroelectric evaluation. The researchers [15,16] used clinical histories, neuropsychological assays, and neuroelectric measures on three groups of individuals. The experimental group was composed of highly accomplished athletes (among the best in the world in various sports). Two control groups were used; one was physically conditioned and one was not. Although early results suggested that the highly accomplished

athletes may in fact have some neurophysiologic trait differences (decrease in delta brain wave activity), clear brain wave changes (increase in P300 amplitude and decrease in delta band) were seen in both this group and the physically conditioned control group in contrast to the unconditioned control group. Interestingly enough, amphetamines have been suggested to heighten hypnotic induction, and highly hypnotizable individuals have been shown to have higher cerebral spinal fluid levels of homovanellic acid (HVA), a dopamine metabolite [17,18]. UCSD researchers Lardon and Polich [15] raised the question of whether elevated levels of dopamine are implicated in the athletic zone phenomenon. They further suggested that because dopaminergic medicines are useful in treatment of attention deficit hyperactivity disorder, predominately inattentive type (ADHD-1), then the zone is possibly in some way the inverse of ADHD-1.

BEYOND CHOKING—THREE DISTINCT FORMS OF PERFORMANCE FAILURE

"Choking" is a colloquial, pejorative term used to convey the phenomenon of acute performance failure under perceived stress; however, acute performance failure is not a homogenous phenomenon. In golf there appear to be at least three distinct, although sometimes overlapping, entities that produce acute performance failure. In an attempt to establish a consistent nomenclature the authors will name these three entities panicking, choking, and the "yips." All three of these phenomena are exacerbated by stress, but they differ in their characteristics. Neuroscience theories of memory and learning are helpful in understanding their etiologies. Explicit (declarative) memory governs the recollection of facts, events, and associations. In contrast, implicit memory deals with procedural memory that does not require conscious awareness; for example, one is able to recall how to ride a bicycle or play the piano after many years of not performing either function [18]. Explicit (declarative) memory appears to be centered in the part of the brain called the hippocampus. When an individual experiences severe stress, there is secretion of epinephrine and glucocorticoids. Severe stress responses can harm and, over time, produce atrophy of the hippocampus, preventing consolidation or retrieval of conscious explicit memory [19]. The individual often experiences this as the mind going blank, something psychologists call perceptual narrowing. The stress response, with concomitant impairment in explicit memory, may hinder one's ability to think clearly during intense competition, leaving the athlete to rely on instinct alone. In summary, when an athlete is exposed to excessive autonomic hyper arousal and panics he turns to his "instinct" and temporarily loses his ability to think critically.

An excellent example of this panic phenomenon in golf occurred in the 1999 British Open, when Jean Van de Velde had a three-shot lead going into the final hole. Those watching the event acknowledged that all Van de Velde needed to do on the dangerous 18th hole at Carnoustie was to hit three conservative iron shots, two-putt for bogey, and receive his first Claret Jug trophy as British Open Champion, with a shot to spare. Van de Velde made a critical strategic error,

however; by relying on instinct, he chose his driver to tee off on the final hole. He compounded this poor decision with another unnecessarily aggressive play by taking a two iron, going for the green, and hitting into the water. His poor judgment continued when he took off his shoes and went into the water to hit his third shot. Finally, he regained his senses, took a penalty shot and made a great eight-foot putt to force a playoff, which he eventually lost. The famous image of Van de Velde going into the water to hit the ball haunts golf fans to this day. It would be reasonable to assume that his mind went blank, and that he relied on instinctive behaviors and lost his ability to think about what shots he needed to attain his goal. This type of performance failure the authors will call panicking, as in Malcolm Gladwell's original description [20]. In contrast, Ben Hogan had a two-shot lead playing the 72nd hole of the 1951 Masters. He hit a perfect drive and then strategically hit his next shot 30 yards short of the green, chipped to four feet short of the hole, and made the putt to secure victory. In fairness to Van de Velde, Hogan was able to think so clearly because he had the experience of twice before losing his chance at victory in the Masters by hitting the ball beyond the hole on this very same green, and three-putting on both occasions [21]!

In contrast, Gladwell [20] posits that choking is not about reversion to instinct but rather about the loss of instinct or the loss of previously mastered motor programs. Motor programs that are normally implicit (are not in conscious awareness) partially reside in the deep brain structures, the basal ganglia and the cerebellum. In conditions of severe stress when an individual chokes, the explicit memory system takes over. An individual who has had mastery of certain motor execution programs (such as a golf swing) starts to consciously think about his swing, thus resulting in loss of fluidity and kinesthetic touch. In a sense, the athlete becomes a beginner again, because he starts to rely on a learning system that is no longer implicit, subconscious and automatic. This is often termed "explicit monitoring" [22].

In their 1993 study of the electroencephalographic patterns of golfers before putting, Crews and Landers [23] found that the best putters had a distinctive bimodal brain-wave pattern in the seconds leading up to the putt. It was noted that the left side of the athletes' brains (which controls logical and analytical processing) was active. Then, just before the subject putted, the left side quieted and the more intuitive right side (which controls spatial orientation, timing, and balance) became more active. The study authors hypothesized that chokers exhibit a different pattern, in which their left brains never shut down. They then raised the question of whether or not this situation led to a possible obstruction preventing the "passing of the baton" to the right frontal-parietal brain hemispheres [23].

In another interesting study [22], Beilock and Carr at the Department of Psychology at Miami University in Oxford, Ohio hypothesized that limiting putting time would actually help execution by preventing skilled golfers from allocating too much attention to task control and guidance. In their experiment, they demonstrated that golfers were more accurate under speed instructions.

They reported that speed instruction aided the performance of several golfers by preventing over-thinking about execution. Their research has also shown that expert swing execution does not require constant monitoring, and that limiting the time experts have to over-think prevents interference with performance and execution of various shots. These two studies [22,23] support the notion that in choking, individuals lose their capacity to access implicit learned motor programs. Thus, they start to over-think and rely on explicit (conscious) learned models, resulting in acute performance failure.

An excellent example of this choking phenomenon was evident in the final round of the 1996 Masters, when Greg Norman had a six-shot lead against Nick Faldo. Norman, the number one golfer in the world at that time, poorly executed a number of shots, which was markedly uncharacteristic of him. He did not panic and make a variety of poor choices, as Jean Van de Velde did in our example. Rather, Norman was unable to properly execute shots that he had previously shown mastery of. In essence, Norman lost his instinct and "touch," and was probably thinking too much, resulting in acute performance failure.

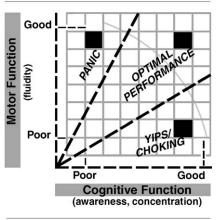
A third type of acute performance failure is often known as the "yips." An example of the yips occurred on the final hole of the 1989 Masters, when Scott Hoch missed a simple 30-inch putt needed to win. Eyewitnesses were shocked wondering how he could yip a short putt that would have won the Masters. He had not three-putted for the entire tournament [24]! The phenomenon of the yips is often referred to as a focal dystonia [25–27]. Dystonia is characterized as a paroxysmal movement disorder in which an unwanted muscle contraction, or twitch, leads to an involuntary movement. In golf, it is seen most commonly in putting, but also is apparent in other shots. Symptoms of the yips, such as jerks during execution of shots, often result in miss-hits. This phenomenon has derailed the illustrious careers of Johnny Miller, Ian Baker-Finch, and Mark O'Meara, as well as being the bane of the average golfer.

The neurophysiology of focal dystonias has been best elucidated by Dr. Jonathan Mink [28]. He postulates that the basal ganglia (the area of the brain where implicit learning resides) is organized to facilitate voluntary movements and to inhibit competing movements that interfere with the desired movement. The idea is that in the basal ganglia there are various motor programs that operate on the subconscious level. When an athlete experiences the yips, or a focal dystonia, the pathways that govern the inhibition of competing motor programs break down. This results in the overriding of the original motor program. Therefore, instead of the individual making one smooth stroke engaging the appropriate motor program, the smooth stroke is interrupted with a twitch. Two motor programs are operating simultaneously, leading to miss-hit shots. The neuroanatomy of the basal ganglia and concomitant neurophysiology are currently of great research interest in the neuroscience community. It appears clear that stress causes release of the activating neurotransmitter glutamate, which in turn causes release of dopamine in basal ganglia pathways that may result in the disinhibition of competing motor programs. This is the reason why yips become more pronounced under stressful circumstances.

The renowned golf teacher, Hank Haney, has recently written a series of articles [29–31], starting in the August 2004 issue of Golf Digest, about overcoming the yips with both drivers and putters. Haney describes his own personal problems with the yips over his 20-year golf career, and relates how he has had success in helping Mark O'Meara regain his putting abilities and his elite golf ranking. Haney's premise is that stroke repetition is not effective. His intervention is to make a small change in the individual's grip, thus engaging a slightly varied stroke and subsequent new motor program. The idea is that by engaging a new motor program, one is able to avoid the phenomenon of a competing motor program overriding the stroke. This "new" practice has resulted in successfully resurrecting the career of Mark O'Meara and a variety of other elite players; however, longitudinal studies and long-term results are still needed to confirm the temporal efficacy of this intervention.

TREATMENT OF PERFORMANCE FAILURE

Although a more comprehensive approach to treatment is beyond the scope of this article, it is important to initially recognize these different causes of acute performance failure so appropriate treatment can be chosen (Fig. 1). The panic phenomenon is best treated with relaxation techniques, breathing techniques, centering techniques, and by learning to use process cues. If panic attacks become recurrent and generalize outside of specific situations, psychopharma-cotherapy with selective serotonin reuptake inhibitors (SSRIs), serotonin and norepinephrine reuptake inhibitor (SNRIs), and low-dose benzodiazepines may be useful. The choking phenomenon described is best addressed by using desensitization techniques coupled with attentional shift techniques, promoting instinctive execution of shots. The yips appears to be most effectively treated through making slight modifications in the golfer's swing or grip, thus engaging a



© 2005 Michael Lardon, M.D.

Fig. 1. Acute performance failure graph.

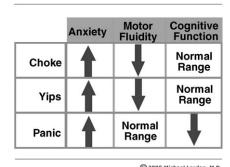


Fig. 2. Acute performance failure table.

different motor program that has not yet been overrun by the disinhibition of competing motor programs. In addition, there have been anecdotal reports of successful pharmacologic treatment of the yips with beta-blockers such as propranalol (Figs. 1,2) [25].

THE ROLE OF THE SPORT PSYCHIATRIST IN GOLF

The role of the sport psychiatrist in golf, as in many other sports, is still being defined. The term "sport psychologist" has almost become a catchall that includes everything from motivational speakers to an athlete's personal guru to research scientists. To understand the role of the sports psychiatrist and other mental health professionals on the PGA Tour, it is helpful to think of a mental health continuum curve (Fig. 3).

Most sport psychologists on the PGA Tour are educators rather than clinically trained mental health professionals. They have certain technical skills or knowledge related to enhancing sports performance and they attempt to teach athletes these skills [32]. In academic and professional circles, the work of performance enhancement is often referred to as "applied sport psychology," and it is premised on the assumption that the athlete is mentally healthy, highly motivated, and

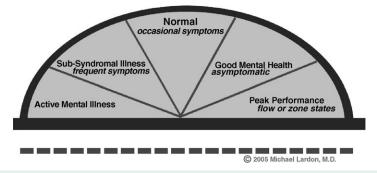


Fig. 3. Mental health well-being continuum.

possesses the mental and physical gifts required to compete at a high level. Applied sport psychology takes individuals who are in the normal range of the mental health performance continuum and tries to advance them into the peak performance realm (move them to the right hand side of the curve) (see Fig. 3). One challenge for applied sport psychologists lies in the assumption that all athletes are mentally healthy and fall into the so-called "normal" range of the mental health continuum. Indeed, depending on an athlete's genetics, biology, and current and past life stressors, any athlete can move along the mental health continuum at different times in his athletic career. It becomes critical for the applied sport psychologist to recognize when an individual is experiencing suboptimal mental health, such as all degrees of clinical depression, anxiety, and other psychiatric disorders. If such a mental health problem occurs, the applied sport psychologist must refer the athlete to the appropriate clinician for treatment, which requires rudimentary knowledge of psychopathology. If the problem is not adequately recognized, the athlete will not only continue to suffer a potentially life threatening condition unnecessarily, but is also impeded from deriving benefit from any kind of performance-enhancement techniques.

An example illustrating this dilemma is an elite golfer who developed panic attacks while playing. He subsequently sought the help of various sport psychologists who were unsuccessful in helping him find his optimal performance, essentially because they used sports enhancements techniques (ie, visualization, mental rehearsal, and relaxation), without recognizing the underlying psychopathology of a panic disorder.

He continued to compete, and the stress, in conjunction with a lack of understanding that he had developed a treatable medical/psychiatric illness, exacerbated his symptoms. He subsequently developed a phobic response to competing in front of crowds, despite having already won multiple times under similar circumstances. He continued his circuit of sport psychologists and motivational gurus for approximately 1 year before a renowned coach finally recognized that he was likely suffering from some form of psychiatric illness. By the time the sport psychiatrist was finally consulted, the individual had developed a full-blown panic disorder, with an entrenched agoraphobia circumscribed to competitive play. Through pharmacologic intervention and cognitive-behavioral education, the athlete's panic attacks have ameliorated. The current treatment has been focused on exposure therapy to address his phobic response; however, his confidence has been severely impaired. It is worth noting, that if the panic attacks had been recognized immediately and concurrently treated, this erosion of confidence could have been minimized or even prevented.

Psychiatrists may also have inherent clinical challenges treating the professional golfer. An excellent example of this challenge is exemplified by an elite female golfer who had been a multiple winner on the Ladies Professional Golf Association (LPGA) Tour and developed depressive symptomatology. She was sufficiently psychologically-minded to bypass her family physician and seek help from a local psychiatrist. Unfortunately, this local psychiatrist was not well versed in the athletic world and, in particular, golf. The psychiatrist placed the

golfer on the mood stabilizer oxcarbazepine, in addition to trazodone for sleep and mood stabilization. She reported that her depression had lifted, but that she experienced morning grogginess and subtle balance and coordination problems. She felt this might be related to her psychotropic medications. Ironically, she did not seek alternatives because she trusted her psychiatrist. This example highlights the problems associated with a patient's positive transference toward her doctor, and the need for specialized psychopharmacologic expertise when treating the elite athlete.

In general, the authors recommend three pharmacologic principles. First, there are no superior medicines within comparable classes that specifically benefit the elite athlete. Fundamental and sound psychopharmacology is the rule. Athletes, like everyone, have individual and idiosyncratic biology and side-effect profiles, requiring customized tailoring of their medication regimens. Second, many athletes are very sensitive to medications, perhaps related to naïve receptor habituation, fitness, and dietary issues. They may show response or performance-related side effects at dosages that are normally considered homeopathic. During titration phases, and occasionally maintenance periods, one may require dosages smaller than the manufacture's smallest aliquots. Last, although it is critical to meticulously ask the athlete about any potential side effects, it is important to recognize that expectations often play a powerful role in determining outcome. The savvy physician will give and gather information about medication efficacy and side effects in a manner that is comprehensive, yet uses the language of the athlete and is not overly leading.

CONCERN ABOUT CREDENTIALING AND LICENSING

On the PGA Tour there are no clear credentialing guidelines for sport psychologists. This allows individuals who have neither doctorate-level training nor credentialing from the Association for the Advancement of Applied Sport Psychology (AAASP) to practice as professional therapists or performance-enhancement consultants. In fact, in Golf Digest's ranking of 26 sport psychologists, which they call the Mental Guru Directory [33], only three are listed as clinical or counseling psychologists. Four individuals listed have no graduate training in psychology, and one individual is an endocrinologist. It was never mentioned that these individuals possessed different skill sets. It is this confusion that adds to the difficulty in helping golfers to consult with the appropriate expert. Fortunately, there are good examples being set. The renowned sport psychologist Robert Rotella, PhD [34], makes it clear that he does not help athletes who have underlying psychological conflicts, but rather circumscribes his treatments and teaching to the field of performance enhancement. Unfortunately, this is not always the case.

CURRENT CHALLENGES TO A MULTIDISCIPLINARY APPROACH

The elite golfer often has a team of health professionals that consists of a personal trainer, physical therapist, sport psychologist, sport medicine physician, orthopedic surgeon, and family doctor. The majority of athletes who suffer from

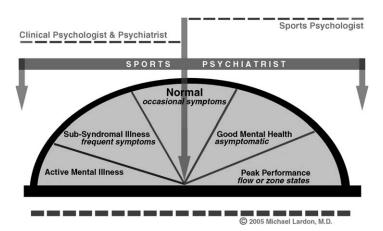


Fig. 4. Role of the sport psychiatrist.

psychiatric symptoms and require psychotropic medicine receive prescriptions from their family practice physicians, and this may be suboptimal due to their minimal psychiatric training. Occasionally, the health team oversteps its boundaries of clinical competence. A health care professional's unrecognized countertransference of wanting to appear more powerful, or conscious concerns of feeling threatened by losing control of the athlete's treatment, may prevent the athlete from receiving optimal mental health services. The psychiatrist, because of his medical training, can be the ideal candidate for functioning as a portal into mental health services. If the psychiatrist gains additional expertise in sport psychology, he will potentially be able to treat all mental health issues or make appropriate referrals (Fig. 4).

THE FUTURE OF MENTAL HEALTH IN PROFESSIONAL GOLF

The AAASP is the largest applied sport, exercise, and health psychology organization in the world. This organization emphasizes appropriate clinical boundaries, confidentially, and the protection of athletes from exploitation. The group's ethical standards, which can be viewed on their Web site [35], state, "AAASP members trained in the sport sciences must be aware of their limitations in clinical and counseling psychology. Individuals from different training backgrounds must deliver services, teach, and conduct research only within the boundaries of their competence." The PGA Tour would benefit from adopting similar standards or requiring sport psychologists to be credentialed through organizations such as the AAASP. Likewise, psychiatry needs a fellowship in sport psychiatry that focuses on the art and science of psychopharmacology with elite athletes and the principles of applied sport psychology. Fellowship programs and credentialing organizations would provide the PGA Tour with the much needed resources to develop its own guidelines and regulations. Ultimately, the sport psychiatrist and psychologist, in addition to the professional golfer, will benefit.

SUMMARY

The interrupted pace of golf provides a unique challenge for competitive golfer. Solid pre-performance routines provide excellent tools for managing common mental errors. Athletic zone states, which may be a subset of flow phenomena, may be understood by looking at models of dissociation and hypnosis. Acute performance failure occurs at even the highest levels of professional golf, and the authors posit three etiologies. Panicking is characterized by autonomic hyperarousal, the player's mind going blank, and the player reverting to instinct. In contrast, in choking, an individual no longer relies on instinct but rather thinks consciously about what was previously a learned behavior (explicit monitoring), resulting in the loss of fluidity. And finally, the "yips" a more extreme form of choking, is characterized by the focal dystonia model. Sport psychologists and psychiatrists will benefit from staying informed about research in cognitive psychology, neuroscience, and applied sport psychology. The concept of a mental health continuum provides the sport psychiatrists and psychologist a guide to evaluate the golfer and refer to the appropriate expert. The authors contend to our sport medicine colleagues that professional golfers and athletes in general are well-served by consulting well-trained and experienced sport psychiatrists.

References

- Kereren
- [1] Singer R. Pre-performance state, routines, and automaticity: what does it take to realize expertise in self-paced events. Journal of Sport and Exercise Psychology 2002;24:359–75.
 - [2] Singer R. Performance and human factors: considerations about cognition and attention for self-paced and externally paced events. Ergonomics 2000;43:1661–80.
 - [3] Walker S. Playing the racing game. In: Winning, the psychology of competition. New York, London: W.W. Norton & Company; 1980. p. 27–30.
 - [4] Leadbetter D. The mind game. In: 100% golf, unlocking your true potential. New York: Harper Collins Publishers Inc.; 2002. p. 173.
 - [5] Wegner D. Ironic processes of mental control. Psychol Rev 1994;101(1):34–52.
 - [6] Janelle C. Ironic mental processes in sport: implications for sport psychologists. The Sport Psychologist 1999;13:201–20.
 - [7] Beilock SL, Afremow JA, Rabe AL, et al. "Don't miss!" The debilitating effects of suppressive imagery on golf putting performance. Journal of Sport and Exercise Psychology 2001;23:200–21.
 - [8] Bandura A. Self-efficacy: the exercise of control. New York: W.H. Freeman; 1997.
 - [9] Netzer G. The way we live now. Encounter; what a year a win can make. New York Times Magazine. August 17, 2003. Section 6, p. 18.
 - [10] Diaz J. Finding the zone. Golf Digest 2004;55(7):134-45.
 - [11] Jackson S. Factors influencing the occurrence of flow states in elite athletes. Journal of Appled Sport Psychology 1995;7:138–66.
 - [12] Csikszentmiahalyi M. Flow, the psychology of optimal experience. New York: Harpers Collins Publishers Inc.; 1990. p. 43–70.
 - [13] Lardon M. Psychiatry grand rounds, University of California at San Diego, April 30, 2004.
 - [14] Spiegel D. Negative and positive visual hypnotic hallucinations: attending inside and out. Int J Clin Exp Hypn 2003;51(2):130–46.
 - [15] Lardon M, Polich J. EEG changes from long-term physical exercise. Biol Psychol 1996; 44(1):19.
 - [16] Polich J, Lardon M. P300 and long-term physical exercise. Electroencephalogr Clin Neurophysiol 1997;103(4):493–8.

- [17] Sjoberg BM. The effects of psychotomimetic drugs on primary suggestibility. Psychopharmacologia 1965;8:251–62.
- [18] Spiegel D. Hypnotizability and CSF HVA levels among psychiatric patients. Biol Psychiatry 1992;31:95–8.
- [19] Sapolsky R. Taming stress. Sci Am 2003;8:87–95.
- [20] Gladwell M. The art of failure. The New Yorker 2000;21:84–92.
- [21] Sampson C. Hogan. New York: Rutledge Hill, Bantam Doubleday; 1996. p. 151.
- [22] Beilock SL, Carr TH. On the fragility of skilled performance: what governs choking under pressure? J Exp Psychol Gen 2001;130:701–25.
- [23] Crews DJ, Landers D. Electroencephalographic measures of attentional patterns prior to the golf putt. Med Sci Sports Exerc 1993;25(1):116–26.
- [24] Riley R, Hoch AS. In choke. Sports Illustrated 1989;70(25):62-5.
- [25] Smith AM, Adler CH, Crews D, et al. The "yips" in golf: a continuum between a focal dystonia and choking. Sports Med 2003;33(1):13–31.
- [26] Bawden M, Maynard I. Towards an understanding of the personal experience of the "yips" in cricketers. J Sports Sci 2001;19(12):937–53.
- [27] Smith AM, Malo SA, Laskowski ER, et al. A multidisciplinary study of the "yips" phenomenon in golf: an exploratory analysis. Sports Med 2000;30(6):423–37.
- [28] Mink JW. The basal ganglia and involuntary movements. Arch Neurol 2003;60:1365-8.
- [29] Haney H, Rudy M. The secret issue: How I cure my driver yips. Golf Digest. August 2004. Available at: http://www.golfdigest.com/search/index.ssf?/instruction/gd200408 driveryips.html. Accessed March 25, 2005.
- [30] Smith R, Rudy M. The chipping yips. Golf Digest. September 2004. Available at: http://www.golfdigest.com/search/index.ssf?/instruction/gd200409chippingyips.html. Accessed March 25, 2005.
- [31] Haney H, Rudy M. How to beat the putting yips. Golf Digest. October 2004. Available at: http://www.golfdigest.com/search/index.ssf?/instruction/gd200410puttingyips.html. Accessed May 24, 2005.
- [32] Nideffer R. The ethics and practice of applied sports psychology. Ann Arbor (MI): McNaughton Gunn; 1981. p. 11.
- [33] Golf Digest. Mental guru directory, 2005. Available at: http://www.golfdigest.com/ zone/. Accessed March 25, 2005.
- [34] Rotella R. Golf is not a game of perfect. New York: Simon & Schuster Inc.; 1995. p. 19–29.
- [35] Association for the Advancement of Applied Sport Psychology. Ethical code. Available at: www.aaasponline.org/governance/committees/ethics/standards.php. Accessed March 25, 2005.