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# How Does Sport Psychology Actually Improve Athletic Performance? A Framework to Facilitate Athletes' and Coaches' Understanding

Behavior Modification

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## Abstract

The popularity of sport psychology, both as an academic discipline and an applied practice, has grown substantially over the past two decades. Few within the realm of competitive athletics would argue with the importance of being mentally prepared prior to an athletic competition as well as the need to maintain that particular mindset during a competitive contest. Nevertheless, recent research has shown that many athletes, coaches, and sporting administrators are still quite reluctant to seek out the services of a qualified sport psychologist, even if they believe it could help. One of the primary reasons for this hesitation appears to be a lack of understanding about the process and the mechanisms by which these mental skills affect performance. Unlike the “harder sciences” of sport physiology and biochemistry where athletes can see the tangible results in themselves or other athletes (e.g., he or she lifted weights, developed larger muscles, and is now stronger/faster as a result), the unfamiliar and often esoteric nature of sport psychology appears to be impeding a large number of athletes from soliciting these important

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services. As such, the purpose of this article is to provide the reader with a simple framework depicting how mental skills training translates into improved within-competition performance. This framework is intended to help bridge the general “understanding gap” that is currently being reported by a large number of athletes and coaches, while also helping sport psychology practitioners sell their valuable services to individual athletes and teams.

### **Keywords**

sport psychology, framework, athletic performance, explanation, understanding

Sport psychology in the grand scheme of things is still a relatively new and contemporary discipline, with academic courses, content-specific publications, and professional governing bodies only emerging in critical numbers as recently as the 1960s. Sport psychology, like most of the sport sciences in North America (e.g., biomechanics, physiology, and nutrition), owes its popularity and academic development to the political and social emphasis placed on competitive sport during the post-cold war era. Similar to the space program and nuclear arms race following the cold war, large amounts of funding and research grants were devoted to the development of comprehensive and effective high-performance sport programs. Since this time, sport psychology has experienced a rapid growth in global popularity, both as an applied practice and also as an academic pursuit. Significant advancements in our understanding of the relationship between mental skills and athletic performance have been made over this time period, with a robust body of knowledge supporting its applied use in the area of performance enhancement. Yet, despite this rapid growth and scientific progress, a large segment of the sporting community still appears to be hesitant and skeptical with respect to soliciting the services of a certified sport psychologist (Anderson, Hodge, Lavalley, & Martin, 2004; Ferraro & Rush, 2000; Mainar, Curry, Sommers-Flanagan, & Walsh, 2001; Martin, Kellmann, Lavalley, & Page, 2002). In an attempt to deconstruct athletes’ reluctance toward sport psychology, and ultimately to overcome it moving forward, researchers have begun studying and quantifying the various attitudes, beliefs, and perceived barriers believed to be central to this issue. The common question guiding this line of research according to Ferraro and Rush (2000) is as follows: “If so many athletes need psychological support and are aware that they have this need, why don’t they seek treatment more often?” (p. 9).

The answer to this question appears to be multifactorial and relatively complex; nevertheless, several common themes have emerged in support of the

concepts I advocate in this article. First, these studies suggest that there is a general lack of understanding among coaches, athletes, and sporting administrators about the process and techniques that comprise a common sport psychology session (Ferraro & Rush, 2000; Gardner, 2001; Zakrajsek & Zizzi, 2007). In fact, some studies have found that members of the athletic community equate sport psychologists with other mental health practitioners (i.e., psychiatrists, psychologists, psychotherapists, and councilors) and thus view the practice of sport psychology in the same way as a more clinically based psychological session—laying on a coach in a quiet office divulging your innermost secrets and emotions (Linder, Brewer, Van Raalte, & DeLange, 1991; Ravizza, 1988; Van Raalte, Brewer, Brewer, & Linder, 1993; Van Raalte, Brewer, Linder, & DeLange, 1990). Unfortunately, this misconception has stigmatized the use of sport psychology services within the athletic domain, much the same way as seeking mental health services has been stigmatized in general society for years (Corrigan, 2004). Therefore, just as people suffering from mental illness often avoid mental health services for fear of being negatively labeled (Kushner & Sher, 1989), athletes appear to avoid the services of sport psychologists for many of the same reasons. This misconception has been further solidified in the athletic domain by coaches' beliefs that sport psychology is only for "problem" athletes and thus not part of a general performance enhancement strategy (Pain & Harwood, 2004; Ravizza, 1988).

Above and beyond the misconception that sport psychologists are simply "shrinks," the single largest barrier under the control of the sport psychologist is the clarity and understanding of the services being proposed (Pain & Harwood, 2004). In all cases where athletes or coaches have been asked about their attitudes toward seeking out the services of a sport psychologist, a general lack of understanding has been cited (Brooks & Bull, 1999; Ferraro & Rush, 2000; Gardner, 2001; Martin, 2005; Martin et al., 2001; Pain & Harwood, 2004; Ravizza, 1988; Van Raalte, Brewer, Matheson, & Brewer, 1996; Zakrajsek & Zizzi, 2007). Interestingly, this lack of understanding appears to be fueling a general lack of confidence in the effect that sport psychology can have on athletic performance, which when entered into a behavioral change model (theory of planned behavior; Ajzen, 1991) has been shown to be the strongest predictor of a coaches' intention (or lack thereof) to use the services of a sport psychologist (Zakrajsek & Zizzi, 2007). Consequently, researchers appear to be unequivocal in their recommendation that sport psychology consultants must place a greater emphasis on, and must become more effective in, educating and informing coaches and athletes about the mechanisms by which sport psychology can influence performance (Gardner, 2001; Pain & Harwood, 2004; Zakrajsek & Zizzi, 2007). For example, Zakrajsek and Zizzi state that "educational

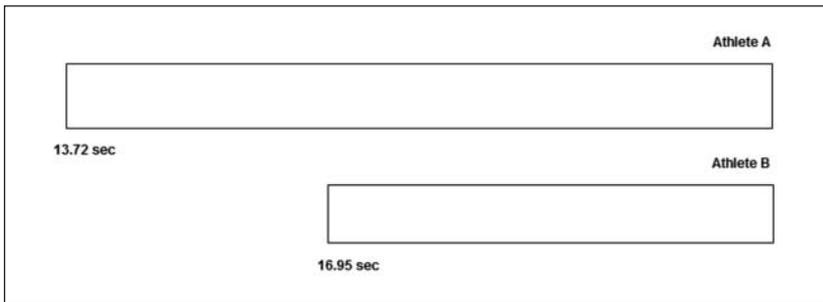
programs regarding the content of SP (Sport Psychology) may serve to increase awareness and interest” within the athletic community and that “the accuracy of coaches expectations prior to consultations may influence their attitudes and intentions to use SP” (p. 2). These sentiments have been echoed repeatedly in the literature and suggest that the most effective strategies for moving sport psychology further into the athletic domain involve helping athletes and coaches better understand how these services can help *all* athletes improve their overall performance (Anderson et al., 2004; Ferraro & Rush, 2000; Gardner, 2001; Pain & Harwood, 2004). As such, the purpose of the current article is to present a working framework that depicts how mental skills training can directly affect an athlete’s within-competition performance. Doing so will hopefully begin to bridge the knowledge gap currently being encountered by sport consultants, while also eliminating the stigma associated with seeking out the services of a sport psychologist by highlighting its importance and applied use for *all* athletes.

## Terminology

There are a couple of important terms that need to be introduced and conceptualized at this point in the article. Both terms have been developed by the author and therefore do not reflect terms currently used in the sport psychology literature.

### *Absolute Performance*

The first construct to be discussed is “absolute performance.” This construct refers to an individual’s theoretical optimal performance (i.e., 100% perfect performance) in a given athletic endeavor. This optimal athletic output is believed to be directly related to an individual’s physiological composition, and thus for the most part, the result of the “genetic lottery.” Let us use the 100-m dash as a sporting example (its one-dimensional and linear design allow it to be diagramed easily). Sprinting performance is correlated with a number of physiological factors: percentage of fast twitch muscle fibers (Kumagai et al., 2000), height and stride length (Kukulj, Ropret, Ugarkovic, & Jaric, 1999), peak oxygen deficit (Weyand, Cureton, Conley, Sloniger, & Liu, 1994), reaction time (Meckel, Atterbom, Grodjinovsky, Ben-Sira, & Rotstein, 1995), and anaerobic capacity (Meckel et al., 1995) to name a few. Some of these factors can be improved on or developed through proper training techniques; however, most are heavily influenced by genetics. As such, certain athletes have a predisposed genetic advantage when it comes to developing these various factors and thus have a very salient physiological advantage when it comes to running the 100-m dash.



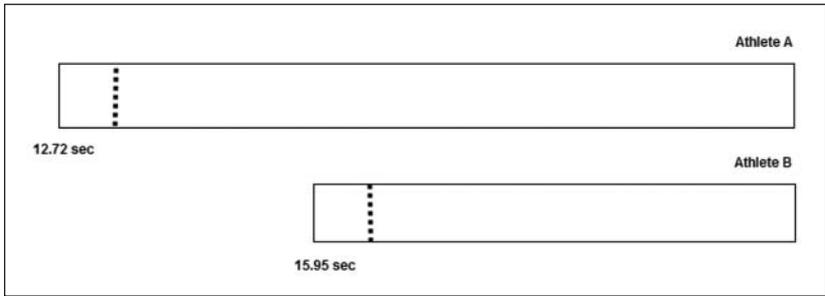
**Figure 1.** Absolute performance differences between Athlete A and B

As explained in Figure 1, Athlete A is a much taller and leaner individual, who possesses a significantly higher percentage of fast twitch muscle fibers, a much faster reaction time, more efficient anaerobic energy system, and a higher peak oxygen deficit. As a result of these attributes, Athlete A is physiologically capable of running the 100 m in 13.72 s. Athlete B, however, is a much shorter and stockier individual with a significantly lower reaction time, lower peak oxygen deficit, and much less efficient anaerobic energy system. In a perfect world, Athlete B's physiological makeup would only allow him or her to run the 100 m in 16.95 s. Consequently, simply due to genetics and his or her subsequent physiological composition, Athlete A has a much higher absolute performance value with respect to running the 100-m dash.

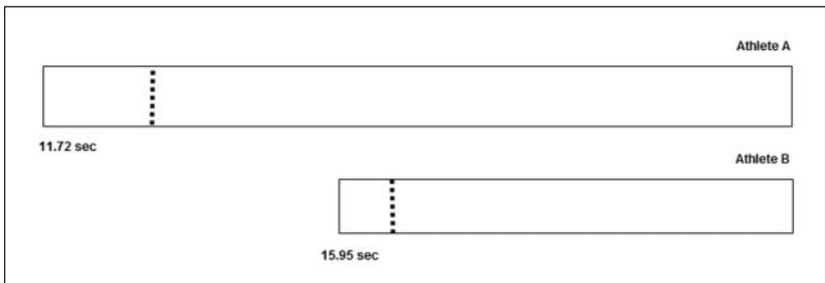
As was mentioned earlier, absolute performance can be influenced to some degree by proper training methodologies. Athletes can build stronger muscles, more efficient nervous systems, alter their metabolic proficiency, and change the composition of their muscle fibers over time. Therefore, physical training can increase an individual's absolute performance potential.

As shown in Figure 2, engaging in the same training protocol allowed both athletes to improve their overall absolute performance in the 100-m dash by 1 s. Nevertheless, Athlete A, due to the physiological advantages he or she possessed from the outset, still enjoys a significant absolute performance advantage over Athlete B.

Unfortunately for Athlete B, genetics also appears to influence the relative gains and improvements that athletes receive as a result of physical training (Zatsiorsky & Kraemer, 2006). Therefore, if given the exact same workout protocol, Athlete A would likely improve far more on these important physiological factors than would Athlete B (Figure 3), which would subsequently translate into even larger absolute performance gains post training (e.g., 2 s off time instead of 1 s).



**Figure 2.** Training improvements to athletes' absolute performance potential

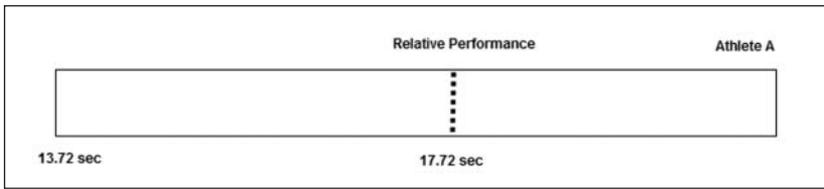


**Figure 3.** Relative nature of training improvements to athletes' absolute performance potential

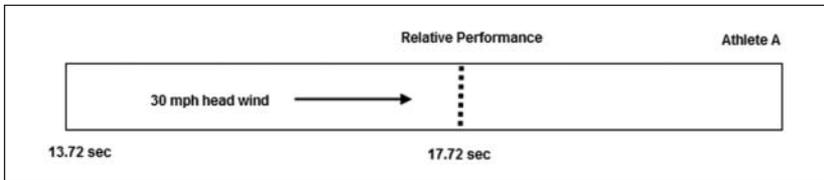
Therefore, the degree or amount that an individual can increase his or her absolute performance value also appears to be predominantly under genetic control. That of course does not mean that Athlete B should not train, it simply means that Athlete B will always be at a theoretical disadvantage when competing against Athlete A because of his or her lower absolute performance potential.

### *Relative Performance*

As was mentioned in the previous paragraph, absolute performance is a purely theoretical concept. It reflects what a person's 100% performance potential would be in a perfect world or "on paper." However, as competitive sport is not a perfect world, with any number of factors impeding an athlete's performance potential at any given time, an athlete's day-to-day or within-competition performance is known as his or her "relative performance." This concept is much more dynamic and situational and reflects how the athlete performed during



**Figure 4.** Relative Performance



**Figure 5.** Example of external performance inhibitor (head wind)

a given competition relative to his or her absolute performance potential. It can also be discussed in proportional terms, such as 75%, 50%, or 25% of the athlete's absolute potential.

If we go back to our original example, Athlete A has the ability to run the 100-m dash in 13.72 s; however, for a variety of reasons (which will be discussed below), he or she ran today's race in 17.72 s (Figure 4), far below his or her perfect-world potential.

Performance inhibitors (i.e., the things that cause an athlete's relative performance to be lower than his or her absolute potential) can manifest themselves in a number of ways and can exist either internal or external to the athlete. Using the 100-m dash example again, a strong headwind would be a common example of an external performance inhibitor that can cause an athlete's relative performance (Figure 5) to be lower than his or her theoretical absolute performance value (i.e., perfect-world performance).

Game officials, opponents, and crowd influences are other potential external performance inhibitors common within competitive sports. Internal performance inhibitors, however, fall into two distinct categories: physiological and psychological. With respect to physiological performance inhibitors, common examples would be injury, fatigue, improper nutrition, and illness. All these conditions might impede an athlete's ability to perform at 100% of his or her absolute ability. With respect to psychological performance inhibitors, this is where sport psychology enters the discussion.

## The Mental Side of Sport Performance

The idea that the mind and body are inherently connected is certainly not new. In fact, it is widely accepted within the psychological community that our attitudes and emotions directly affect our bodies at a physiological level (Bradley & Lang, 2000) as well as the behavioral responses that we choose and the effort that we put forth toward their execution (Leith & Baumeister, 1996). The same principles also govern sport performance. There are a number of psychological (attitudinal/emotional) constructs that have been shown to be counterproductive to sport performance (see Dosil, 2005, for a sport-specific overview), the bulk of which are beyond the scope of the current article. When an athlete's psychological state is acting in a counterproductive manner, it is much like the headwind example presented earlier with respect to how it negatively affects an athlete's relative performance. To highlight this, the construct of precompetitive anxiety will be discussed in more detail.

Precompetitive anxiety is believed to be the most frequently cited psychological issue facing competitive athletes (Hardy, 1997; Martens, Vealey, & Burton, 1990; Smith, Smoll, & Schutz, 1990). Anxiety refers to the cognitive concerns/worry and autonomic responses that accompany a stressful situation, particularly when the perceived situational demands exceed the individual's perceived ability to meet those demands and successful performance in the activity is important to the individual (Lazarus, 1991; Spielberg, 1966). Most, if not all athletes, have experienced a heightened level of worry or butterflies before a big competition. Research in the behavioral sciences reveals that athletes require a moderate amount of activation (i.e., can't compete if you are too relaxed or asleep) to perform optimally and that too much anxiety is detrimental to success (Hanin, 1995; Yerkes & Dodson, 1908). What constitutes too much or too little anxiety is usually task specific and individualized; nevertheless, the mechanisms by which elevated anxiety impedes performance remain constant.

Elevated anxiety directly causes a number of physiological changes that have the potential to significantly impede athletic performance. For example, elevated anxiety results in a narrowing of the perceptual field and a reduction in an individual's ability to shift attention (Easterbrook, 1959). Moreover, elevated anxiety significantly impairs fine motor functioning (Oxendine, 1970), disrupts blood flow patterns (Mathew & Wilson, 1990), impairs decision-making abilities (Jones, 1990; Keinan, 1987), and causes muscles to become more tense (Kleine, 1990), all of which can negatively affect an athlete's ability to execute certain sport-specific behaviors in a fluid and automated manner. Therefore, just like the strong headwind described earlier, psychological factors

such as anxiety have a direct impact on an athlete's within-competition relative performance by affecting an athlete's ability to execute the necessary sport-specific skills in a fluid, automated, and coordinated fashion.

The primary difference between these psychological factors and environmental impediments such as the strong headwind, and thus the importance of mental skills training, is that they are under the control of the athlete. Therefore, unlike the headwind, an athlete can actively work toward controlling and minimizing the negative effects that certain psychological constructs have on his or her daily performance. By doing so, an athlete with a lower absolute performance potential (i.e., less genetic advantages) can outperform a physiologically superior athlete by minimizing the influence of these psychological performance inhibitors and thus maximizing his or her relative performance for that particular competitive contest.

## **Psychological Strategies for Addressing Heightened Precompetitive Anxiety**

As was mentioned in the previous section, anxiety is both a cognitive (thoughts of worry and apprehension) and somatic (butterflies, cold hands, and fast shallow breathing) construct, both aspects of which negatively affect athletes' performance by inhibiting their ability to execute critical skills at a level indicative of their inherent potential. As such, any psychological strategy aimed at reducing anxiety's impact on performance should attempt to address both components, at least to some extent (Burton, 1990). It is well recognized in the sport sciences that both forms of anxiety are inextricably linked and that interventions aimed at one ultimately affects the other (Hardy, Jones, & Gould, 1996).

### ***Cognitive Anxiety***

Regarding cognitive anxiety, the negative thoughts and subsequent self-doubt athletes experience not only distract them from the task at hand but can also influence their within-game behavioral decision making. For example, athletes who doubt themselves may elect to pass rather than shoot out of fear of missing. Moreover, athletes may also miss relevant external cues (e.g., coach's instructions and unguarded teammate) because their attentional focus is directed internally toward these thoughts of worry, self-doubt, and apprehension. As a result, strategies aimed at addressing cognitive anxiety must affect how athletes appraise the competitive environment ahead of time and/or their ability to change cognitions while competing.

A common precompetitive strategy used by sport psychologists is known as rational emotive therapy (RET; Ellis, 1982). As Crocker, Kowalski, and Graham (2002) state,

This approach assumes that athletes create unpleasant emotional states such as anxiety and anger through thinking patterns that are based on irrational beliefs. Typical irrational beliefs are a need for personal perfection, a need for situations to be perfect, a belief that others must treat you fairly and respectfully, an essential need for social approval, and a belief that self worth depends on [athletic] achievement. (p. 161)

The process of RET is intended to help the athlete appraise and interpret the competitive situation from a more rational and grounded perspective. For example, athletes should learn that their self-worth and identity are not inherently tied to the outcome of a given athletic contest and that even though success and winning are important, losing is not the end of the world. Doing so has the potential to reduce the importance that athletes place on the competitive outcome and thus their fear of failure. Overall, this therapeutic technique likely sounds straightforward to the reader; nevertheless, the process of restructuring human thought patterns is one that is quite labor intensive and requires extensive professional training.

When cognitive anxiety arises during a competition (e.g., athlete is awarded a potential game-winning free throw in basketball), other cognitive restructuring techniques such as self-talk (Zinsser, Bunker, & Williams, 1998), thought stopping (Ziegler, 1987), centering (Hardy et al., 1996), and reframing (Anderson, 2005) have been shown to be effective. These strategies teach the athlete to be cognizant of his or her internal negative dialog and to replace these thoughts with more positive and reaffirming statements. For example, an athlete at the free-throw line, who is doubting his or her ability to score the winning basket, could be taught to step off the line, stop the negative dialog, and repeat affirming statements such as "I have made this shot thousands of times, I can do this." Such techniques reestablish a positive cognitive mindset within the athlete and therefore have the potential to facilitate performance rather than impeding it.

### *Somatic Anxiety*

Somatic anxiety has a much more direct impact on athletic performance due its physiological manifestation. Consequently, the central theme in addressing somatic anxiety involves helping athletes regulate their autonomic arousal response (i.e., relax themselves) by first teaching them what heightened arousal

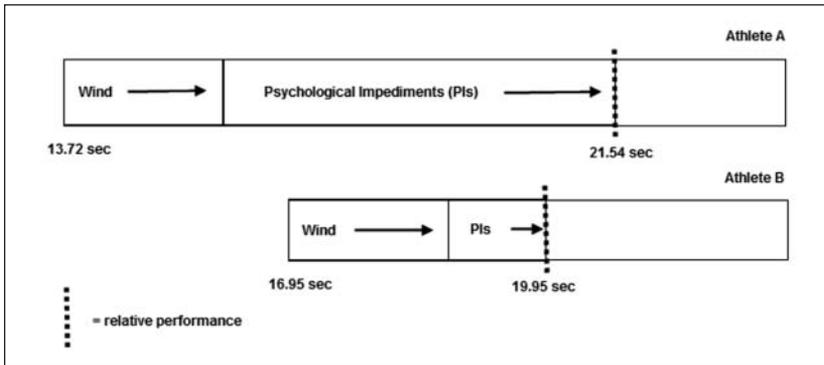
feels like and then relaxation strategies aimed at reducing it. Several techniques have been shown to be effective in reducing precompetitive and within-game somatic anxiety, all of which require substantial training and practice ahead of time. Progressive relaxation teaches an athlete to become a stronger self-monitor by having him or her tense and relax muscle groups sequentially. Athletes are taught to focus on what the tension feels like in each muscle group to become more aware of when their bodies are experiencing heightened arousal. Bio-feedback works under similar pretenses and teaches athletes how to recognize and proprioceptively experience a number of physiological changes associated with heightened arousal (e.g., increased heart rate and breathing rate). By helping athletes identify when they are experiencing heightened arousal, they can then become more proactive in reducing this performance-inhibiting physiological response.

There are a number of relaxation strategies that athletes can use both before or within a competition to reduce heightened physiological arousal. Examples include meditation, centering, three-part breathing, and imagery. Through extensive practice, athletes can learn to elicit a physiological relaxation response and thus counteract the negative effects of heightened arousal. Doing so has the potential to bring the athlete's arousal level back to a moderate or acceptable range, thus negating or reducing the physiological impediments associated with elevated arousal.

The preceding section is not an exhaustive review of the precompetitive anxiety literature but should give the reader a general understanding of how psychological factors such as anxiety can affect athletic performance and, more importantly, how sport psychology strategies can counteract these psychological impediments. Above and beyond competitive anxiety, there are a number of psychological factors that can impede an athlete from achieving his or her optimal performance. The strategies used by a sport psychologist are obviously construct specific but, like the above example, work toward counteracting the negative effects of the psychological issue. In all cases, the desired outcome is to minimize these psychological performance inhibitors and to help the athlete perform all the relevant skills to the best of his or her inherent ability.

## **Sport Psychology Skills and Relative Performance**

As is hopefully evident at this juncture in the article, sport psychology cannot make you a better athlete in an absolute sense (e.g., does not alter your muscle fiber composition or affect your anaerobic efficiency). What it can do is help you perform at a level closer to your absolute potential (i.e., increase your relative



**Figure 6.** How an athlete's ability to handle performance inhibitors influences their relative performance

performance) on any given day. In doing so, mental skills training has the ability to “level the playing field” between athletes who possess different absolute abilities.

As shown in Figure 6, we once again have our two athletes on the starting line of the 100-m dash. Athlete A possesses several of the physiological gifts (e.g., muscle fiber composition, anaerobic capacity, and oxygen deficit) that allow him or her to excel as a sprinter and as such has the capacity to run the 100 m in 13.72 s. Athlete B, however, was not born with these gifts and therefore only has the absolute potential to run the 100 m in 16.95 s. On paper then, Athlete A has a significant absolute performance advantage.

On race day, however, both athletes are staring into a fairly strong headwind. This headwind is obviously going to slow both athletes down and thus affect their relative performance that day. The interesting thing about environmental performance inhibitors is that they overwhelmingly affect all athletes' equally. In doing so, environmental factors offer no real performance advantage to an athlete, as the athlete with the larger absolute performance potential still realizes the same inherent advantage.

Psychological impediments, however, are very individualized and thus their relative impact on performance differs significantly between athletes. Individuals who are able to minimize or control the effects of these psychological impediments (e.g., elevated anxiety, lowered confidence, distractions, and motivation) will experience a much lower drop in their absolute performance than will individuals who succumb to these psychological impediments. Therefore, as shown in Figure 6, Athlete A appears to be suffering from a number

of psychological issues (e.g., anxiety, distraction, and lowered self-confidence), all of which are detracting from his or her ability to perform optimally. As such, these psychological factors are driving his or her relative performance significantly lower. Athlete B, however, is able to control and minimize the effects of these psychological impediments and in doing so has the ability to minimize their negative impact on his or her performance. Consequently, even though Athlete B had a much lower absolute performance potential when compared with Athlete A, he or she was able to run faster than Athlete A in this particular race because of his or her ability to minimize the effects of these psychological inhibitors, thus maximizing his or her relative performance. Using the anxiety example discussed previously, Athlete B was able to use both pre- and within-competition strategies to reduce his or her cognitive and somatic anxiety and thus was able to ensure that he or she was at an optimal level of arousal during the competition. Athlete A, however, succumbed to the pressure and nerves associated with the athletic competition and was negatively affected by both cognitive and somatic anxiety.

Overall then, sport psychology is intended to help athletes compete as close to 100% of their theoretical potential as possible. These strategies help athletes control and minimize the negative effects associated with a number of common psychological impediments (e.g., anxiety, confidence, and concentration), all of which directly affect performance.

Sport psychology's greatest impact on relative performance, and thus competitive outcomes, is likely realized when there is very little difference in the absolute performance potential between competitors. Let us use the 100-m finals at the Olympics as an example. The eight men or women who line up to run that race are almost identical at a physiological level to one another. They have roughly the same muscle fiber composition, oxygen deficit, stride length, reaction time, and metabolic functioning, and as such, all have relatively similar absolute performance potentials. They are all likely well rested on race day and have prepared themselves properly in the areas of nutrition and hydration, thus negating the physical impediments that could potentially reduce their relative performance that day. Consequently, what appears to distinguish first place from last is each athlete's ability to handle the stress, pressure, anxiety, and nerves associated with standing on the starting line of the 100-m finals at the Olympic Games. The athlete who handles this psychological pressure the most effectively, and thus minimizes the negative effects of these previously mentioned psychological impediments, will likely be the one who will perform closer to his or her inherent potential and subsequently win the race. In a more diverse pool of athletes, absolute performance potential is likely the most predictive of success.

## Conclusion

There are a number of psychological factors that have the potential to negatively affect an athlete's ability to perform optimally (e.g., anxiety, nerves, poor concentration, and self-doubt). Generally, however, detrimental thoughts, attitudes, and beliefs all affect an athlete's ability to execute skills at a level that they are physiologically capable of. As such, the role of sport psychology is to provide athletes with the necessary tools and strategies to address these psychological factors as they arise and thus minimize their negative impact over performance. As one athlete puts it, a sport psychologist's job is "to get my [the athlete's] head out of my body's way" (Gardner, 2001, p. 35).

The framework I presented should be treated and interpreted as preliminary at this point in time. It does, however, serve as a starting point for addressing the common concerns facing sport consultants in the field. By taking sport psychology out of the abstract and making it something that coaches and athletes can visualize, the current framework gives practitioners a perspective for presenting their valuable services in a more interpretable format. It is certainly my intention that this framework for understanding be developed and expanded in the future, as I acknowledged that the current framework presents an oversimplified explanation of sport psychology as an applied practice. A more detailed explanation of specific strategies and techniques should unquestionably be a component of the consultative process, with the current model serving primarily as an introductory talking point to help consultants "get their foot in the door."

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## Bio

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