Critical Thinking and the Evidence-Based Practice of Sport Psychology

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The primary purpose of this article is to expand the discussion about the role of science, clinical thinking, the state of the discipline, and the manner in which evidence-based practice may aid in the development of the field of sport psychology. Rejecting pseudoscientific principles and embracing sound scientific standards of research and practice will result in an increasingly fresh and vibrant field from which greater innovation and evolution can occur. This innovation will inevitably lead to a renewed commitment to theory building, as the evolving scientific database will drive new ways of thinking about the myriad of issues presented by athletic clientele. By embracing the evidence-based practice philosophy, not only will sound scientific advancements emerge, but most importantly, the overall well-being of our athletic clientele will be enhanced.

Key Words: critical thinking, evidence-based practice, EBP, EST, empirically supported treatments, science, pseudoscience

At the foundation of any type of professional practice is the need for systematic decision making. Every health care professional, including those within the psychological sciences, must develop an approach to making sound professional decisions with respect to assessment, diagnosis, intervention strategy and technique, and goals of service. But beyond these global decisions lie a myriad of micro decisions that are inevitably made in a moment-to-moment fashion. Such questions include (but are not limited to): (a) What do I focus on first with this client?, (b) How do I evaluate progress?, (c) What is the known efficacy of the interventions that I might choose?, and (d) What are the risks and what are the probabilities of success or failure? From these questions come even more basic questions, such as: (a) Which criteria do I use to determine answers to the above?, and (b) What source of information do I use to help me determine the appropriate answers? While these overarching issues and the questions contained therein are important to all helping professions, this article will focus on the issues specifically pertaining to the practice of sport psychology.

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Critical Thinking

Critical thinking is the basis for all professional decision making. Gambrill (2005) defined critical thinking as “…a unique kind of purposeful thinking in which we use standards such as clarity and fairness. It involves the careful examination and evaluation of beliefs and actions in order to arrive at well-reasoned decisions” (p. 11). The hallmark of critical thinking is active skepticism. This refers to the spoken or unspoken questions that must be asked in response to professional claims, regardless of the authority of the source. Such questions may include: (a) What is the data in support of this claim?, (b) Have they been replicated by independent sources?, (c) Have any facts been omitted?, (d) Are there alternative explanations for the results?, (e) What are the sources of these data and are they free of bias?, (f) From what kind of research are these claims being made?, and (g) How relevant are these findings to my client? Inherent in critical thinking is a basic process of careful evaluation of claims and arguments no matter how cherished and no matter who is making the claims. Critical thinking requires independence and open skepticism. That is, being neither gullible nor cynical, neither looking for reasons to believe nor reasons to deny.

It should be clear from this basic position that critical thinking and scientific reasoning are closely related. Critical thinking drives professionals forward by never allowing individuals to be complacent or to spontaneously and reflexively accept the claims and suggestions of others.

Critical Thinking and Scientific Reasoning

Science can be seen as a way of thinking about and actively investigating the world around us. Yet often, science is incorrectly equated with logical positivism. Logical positivism stresses that direct sensory observation is the hallmark of science, thus rejecting theory and theory building. For several decades, this model of science has been rejected and has paved the way for a constantly evolving problem-solving approach to science (Gambrill, 2005). In this regard, Popper (1972) suggested that the scientific method could be summarized in four discreet steps: (1) select a problem, (2) begin to define questions about the problem by proposing a theory, (3) critically discuss and test the theory, and (4) respond to flaws in the theory and/or new information by going back to step 3, and then forward again. From this perspective, scientific knowledge is never absolute, but is incremental and always in a state of evolution.

In contrast to science, *pseudoscience* can be simply defined as an approach that asserts science-like claims but fails to provide (and does not actively search for) evidence to support those claims (Lilienfeld, Lynn, & Lohr, 2003). Pseudoscience can be identified by a number of telling characteristics. For instance, there will often be an over-reliance on anecdotal evidence, a lack of critical skepticism, and a tendency for unsupportive data to be ignored or explained away. In addition, proponents of pseudoscience typically hold beliefs that are not self-correcting and evolutionary. While pseudoscience has the trappings of empiricism, it instead relies on authority and tradition, and often asserts that much of what is necessary
to know is already known. A profession based on pseudoscience will inevitably become stagnant at best and harmful to clients at worst. In either case, the result will be an increase in consumer skepticism.

The challenge for the practitioner is to remain committed to the idea that scientific inquiry is inextricably connected to professional practice. In turn, professional practice is directly informed by the evolving professional literature. While busy professionals cannot be expected to carefully accumulate and evaluate each individual empirical study that is published, they must be on guard against blindly accepting conclusions presented by individual authors. As such, many professionals turn to meta-analyses to gain a comprehensive understanding of emerging data, as they are used as a means of combining effect sizes across many studies. Unfortunately, this method is fraught with numerous methodological flaws, thus suggesting the need for cautious acceptance of this approach (Gardner & Moore, 2006; Slavin, 1995). In contrast, structured qualitative reviews with clear criteria for determining current levels of empirical support for a given procedure have most recently been used as an alternative to meta-analytic procedures (Chambless & Hollon, 1998; Gardner & Moore, 2006), and provide a systematic means of evaluating the efficacy of a given procedure based on rigorous, consensually developed, and clearly stated criteria.

Given the emphasis on critical thinking and scientific reasoning in professional practice, it is necessary to briefly discuss frequently observed non-scientific criteria for evaluating professional claims. Fundamental to each of the often used, yet problematic approaches to the evaluation of professional claims, is what has been referred to as the post-hoc ergo proctor-hoc fallacy. This is the false belief that if an event (intervention X) precedes another event (outcome Y), then the preceding event must have caused the second event. This fallacy is inherent in all non-scientific evaluation of professional claims and underlies the following questionable criteria (Gambrill, 2005) for evaluating professional knowledge:

1. **Fallacy of authority and style of presentation.** This refers to the belief that professional experience, success, status, and/or confidence in presentation are by definition correlated with accurate professional knowledge.

2. **Fallacy of popularity and tradition.** This assumes that because many professionals adopt a particular technique or strategy, and this technique or strategy has also been historically used (often for a lengthy period of time), the professional accuracy of the technique or strategy has been demonstrated.

3. **The fallacy of personal opinion.** This essentially assumes that one’s personal beliefs, emotions, and judgments about logic and rationality are a reasonable means of both determining the accuracy of professional claims and determining effective forms of practice.

The result of these fallacies is often an over-reliance on testimonials, personal experience, intuition, and/or critically unexamined assertions by those in authority. Given the importance of critical thinking and professional decision making in a service profession such as sport psychology, it is important to highlight the potential barriers to this most important professional activity.
Barriers to Critical Thinking

While critical thinking skills are necessary for all helping professionals, there appear to be a number of significant barriers to the development of critical thinking:

1. The belief that lack of overwhelming empirical information means there is insufficient data from which to make important professional decisions. For example, while we can never know everything there is to know about depression and its treatment, the current empirical data is certainly sufficient to make informed professional decisions. Thus, the fact that knowledge can never be complete is not an adequate reason to reject the evidence that does exist. Professionals who adopt this reasoning often reject scientific evidence as insufficient, and subsequently make professional decisions based on personal and subjective factors only. Two common outcomes emanating from this barrier include a reluctance to carefully consider and become informed by the professional literature, and the refusal to actively seek out new scientific information.

2. There is a desire to find evidence for preferred theories and discount the evidence for competing ideas. This attitude prevents practitioners from assimilating and accommodating new information into their existing practice. It is often more comfortable to practice with the belief that one’s knowledge is sufficient and that the modification of practice techniques is unnecessary. This explains the vast number of professionals practicing in 2007 the same exact way that they and/or others practiced in 1987.

3. There is interference from economic and political interests. Naturally, there are important economic factors involved in how an individual practices. Practitioners do what they know, and get paid for what they do. This includes successfully, and often stridently, selling themselves and their particular talents. Altering or adjusting these practices may therefore impact one’s economic interests. Similarly, it is understandably difficult to acknowledge that how an individual has been practicing for a number of years should now change due to new scientific findings. Rejecting these findings, and in doing so rejecting critical thinking and the scientific basis for professional practice, is often easier than making the difficult decision to learn and implement new methods and techniques. This may help explain why those who have historically been reinforced through direct financial compensation or more ego-gratifying rewards are often likely to resist practice changes dictated by new empirical findings.

The consequences of these barriers impact professional practice at multiple levels. They negatively affect the manner in which clients are assessed, the manner in which clients are viewed/diagnosed and treated, and the manner in which predictions or assurances are made regarding intervention effectiveness. Ultimately, these barriers negatively affect the way professionals (including sport psychologists) are perceived by the clients they intend to serve. In response to the negative consequences of this non-scientific approach to professional decision making and practice, a more scientifically advanced approach to professional practice recently emerged. This approach, termed evidence-based practice (EBP), will be the vehicle that takes sport psychology into the 21st century.
Evidence-Based Practice

Originally initiated in the medical community, evidence-based practice began in earnest within professional psychology in the early 1990s (Chambless & Hollon, 1998; Gardner & Moore, 2006; Kendall & Chambless, 1998). At its most basic level, EBP describes a means of facilitating well-reasoned decisions by encouraging the practitioner to effectively integrate scientific research findings, the preferences, circumstances, and uniqueness of each client, and his or her professional judgment. EBP requires that busy practitioners be able to acknowledge what they do not know, and accept the ever-present gap between their current practice and scientific innovation. In addition, the evidence-based practice movement provides a philosophy and method to gain access to the most recent and relevant information to guide informed decision making. Because the gap between research and practice inevitably culminates in practice methods well behind the most current state of the science, EBP is fundamentally intended to minimize the disparity between scientific research and the practical application of this research (often noted within the psychological sciences).

The development of EBP is fairly recent, and primarily evolved out of concerns about the serious divide between available professional knowledge and the services offered by professionals. Gray (2001) has suggested that professional practice has too often been associated with an overenthusiastic adoption of interventions with unproven efficacy or proven ineffectiveness, and the continued use of interventions without evidence of efficacy. This has seemed to be the case due to a lack of commitment to integrating the best available evidence into one’s practice repertoire, a lack of resources to adequately access up-to-date research, and a lack of clear standards of care to which practitioners can refer.

In response, and as an active effort to reduce this serious divide between research and practice, EBP involves the ongoing and explicit use of current “best evidence” in making decisions about the care of individual clients (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). It also requires that best evidence be integrated with clinical expertise (the trained and effective implementation of best practices) and client values and preferences.

The core of EBP includes a consideration of two fundamental constructs. The first is ethics in professional practice, in which the focus is on how and when to act, and in consideration of which professional standards. Clearly, at its core, EBP is an ethically committed approach to practice, and carefully holds the dictum “do no harm” as a guiding standard for professional activity. In this regard, the practitioner of EBP will inherently use and be comfortable with an open, collaborative, and exhaustive informed consent for all clients (for a discussion of informed consent in sport psychology, see Gardner and Moore, 2006). The second fundamental construct is a consideration of epistemology. That is, what is “knowledge” and what is “best available research”? From the EBP perspective, scientific knowledge certainly takes many forms and requires numerous investigative processes. As such, EBP does not outwardly and reflexively reject correlational research and anecdotal evidence. Yet, EBP recognizes that while these procedures are often important in the early stages of the advancement of new and innovative interventions, they should be followed with structured (multiple baseline) case studies and randomized clinical trials. As the burden of proof always lies with those presenting new and innovative strategies.
and techniques, ultimately, randomized controlled trials (RCTs) become an impo-
tant vehicle for determining intervention efficacy and effectiveness. Since RCTs
come closest to providing incontrovertible evidence, they are therefore critical to
the development of cutting-edge science.

It should be noted that EBP requires a conscious choice to move away from
professional practice that is based simply on appeal to authority. In this type of prac-
tice, professional decision making is typically based solely on expert testimonial,
consensus, and tradition. Such practitioners are potentially at risk for modifying or
misusing evidentiary findings that contradict their practice styles, and justify the
continuation of long held, yet questionable techniques and strategies.

**Basic Steps in Evidence-Based Practice**

The following are a suggested series of steps for the practitioner committed to
EBP (Gambrill, 2005):

1. Make an open and formal commitment to EBP. This includes the recogni-
tion of the need for life-long education and training in one’s specialty.
2. Convert practice decisions into answerable (and testable) questions.
3. Actively and aggressively search out the best available evidence that answers
these questions. This includes a critical appraisal of the evidence, including such
concepts as effect size, validity, and comparison of research subjects to one’s cli-
entele.
4. Consider issues related to the application of these findings in practice situ-
ations. This includes a consideration of appropriate training for practitioners, and
relevant client needs, preferences, and values.
5. Engage in a concerted and systematic effort to measure effectiveness of
services provided. Of course, it is assumed here that when the practitioner deter-
mines through ongoing progress evaluation that the client is not improving or
that additional barriers exist, the practitioner will be willing to modify his or her
intervention protocol as needed.

When these elements are integrated into one’s personal practice philosophy, the
practitioner can feel more confident that he or she is using cutting-edge scientific
evidence to drive professional decision making.

**Objections to Evidence-Based Practice**

A discussion of the importance of evidence-based practice cannot be presented
without a fair discussion of the common arguments against this approach.
Common objections to EBP usually fall into a defined number of arguments. Some of these arguments are based on a fundamental misunderstanding of EBP,
and some are based on the correct conclusion that following EBP will inevitably
result in the need for new skills and altered practice methodology. What follows
is a brief statement of the common objections that result from a misunderstanding
of EBP, followed by the appropriate counter-argument. I have chosen not to
respond to objections based on the correct assumption that new and additional
skills and practice styles will inevitably be required of the professional committed to EBP.

1. **EBP minimizes the role of clinical/professional expertise, is a cookbook approach to client problems, and inevitably limits professional autonomy.** Regardless of my counter-argument to follow, I am sure that this article will inevitably be criticized by individuals holding the false belief that EBP denounces expertise, is too structured (thus impacting the therapeutic relationship), and does not allow for flexibility and personal decision making. In anticipation of this flawed position, please let it be clear that the basis for, and in fact the very definition of EBP suggests that it involves the integration of “individual clinical expertise with the best available external clinical evidence from systematic research” (Sackett, Richardson, Rosenberg, & Haynes, 1997, p. 2). It is both logical and fundamental to EBP that external guidelines, ascertained through a review and understanding of the best available research, must be integrated with individual professional expertise to determine the match between research and the individual needs, preferences, and situation of the client. This can take the form of either structured or more unstructured interventions, as there is nothing inherent in EBP that requires a particular type or style of intervention, or a certain theoretical orientation.

Finally, regarding professional autonomy, EBP itself does not restrict one’s ability to make autonomous professional decisions. Instead, professional licensing laws, codes of ethics, and legal realities relating to malfeasance and malpractice already place limits on professional autonomy. A professional license or certification affords an individual the responsibility to act in the best interest of his or her client and not simply in his or her own best interest. It can be argued that practitioners who choose interventions based on authority, testimonials, and/or personal resistance to change are practicing in the service of their own best interest, and may be restricting the potential for growth and development of their clients by rejecting best practice data and intervention techniques that have scientifically demonstrated efficacy and effectiveness.

2. **EBP is limited to randomized controlled trials (RCTs) only, we really do not know how to measure outcomes, and EBP is drawn from behaviorism and positivism.** While there is clearly a preference for scientific methodologies that critically evaluate claims, there are number of approaches to knowledge that can be included (although none are sufficient in and of themselves). RCTs, qualitative research, single case multiple baseline designs, and a variety of more complex longitudinal research methodologies are all appropriate and must be seen in their totality. Outcome measurement is central to science and practice, and the potential difficulty in developing appropriate measures is not a valid reason to negate the entire process of EBP. In addition, as noted earlier, contemporary science is clearly not equivalent to logical positivism, which asserts that direct sensory observation is the only necessary tool upon which to build a science. Finally, EBP was initiated in medicine well after the development and growth of behaviorism, and in fact has nothing at all to do with behaviorism as a theoretical tradition or a scientific discipline.

3. **Evidence will not be found for many questions, evidence is a matter of personal opinion, and you can always find evidence for a favorite perspective if you look hard enough.** It is an ethical imperative to search for the most relevant
and up-to-date research findings. While it is true that science can offer few absolutes, empirical evidence will regularly inform the practitioner-scientist in a manner that allows for critical thinking and appropriate professional decision making. Of course, this places the burden on the practitioner to seek out knowledge and develop the skills and consultative resources needed to integrate new information and develop new proficiencies when necessary. The role of personal opinion is fraught with challenges (i.e., subjectivity in all forms), and as such, the professional must learn to count on relevant professional organizations to provide rigorous criteria to evaluate research claims (and not simply criteria that make everyone feel comfortable). Professional reviews conducted without bias will consider all available data, and include this data in an open and careful manner. The practitioner must be able and willing to access and consider these reviews to investigate the merits of a professional claim. Of course, while there will frequently be some contradiction and disagreement among a body of data, the professional should rely on the predominance of evidence in making decisions, instead of relying on a select group of findings that support his or her preferred position.

**Evidence-Based Practice and Sport Psychology**

Sport psychology concerns itself with both the performance and mental health needs of athletes and sport organizations. As such, it is legitimate to consider the evidence base for the procedures most commonly used with athletic clientele.

Over the last several decades, a multitude of studies have examined the most common interventions for the enhancement of athletic performance. These interventions typically include, both individually and in various combinations, goal setting, guided imagery, cognitive/self-talk modification, arousal control procedures, and stimulus control procedures (pre-competitive routines). A number of meta-analyses and qualitative reviews have suggested guarded, and often equivocal support for the use of these procedures, and authors consistently note serious concerns regarding poor methodology and a troubling lack of consistency in both the number of appropriate studies and the consistency of results (Feltz & Landers, 1983; Gould & Udry, 1994; Greenspan & Feltz, 1989; Martin, Vause, & Schwartzman, 2005; Murphy & Jowdy, 1992; Vealey, 1994; Weinberg & Comar, 1994; Whelan, Mahoney, & Meyers, 1991).

In response to the contradictory empirical findings in the literature for the most common interventions used for athletic performance enhancement, this author recently conducted a structured, qualitative review (not a meta-analysis) of the empirical evidence for the use of psychological skills training procedures to enhance athletic performance (Gardner & Moore, 2006; Moore, 2003). As noted earlier, we must use rigorous and unbiased criteria to evaluate research claims. As such, the structured qualitative review used the stringent criteria for determination of empirical support established by the American Psychological Association’s Division 12 (Society of Clinical Psychology) Task Force for the Promotion and Dissemination of Psychological Procedures (Chambless & Hollon, 1998). Using this carefully constructed criteria that has been adopted by numerous sub-disciplines within professional psychology (Kendall & Chambless, 1998; Spirito, 1999), the purpose of this investigation was to determine the level of empirical support for
the common psychological skills training procedures used for the enhancement of athletic performance, and to subsequently provide the sport psychology practitioner with clarity regarding the efficacy of these traditional methods.

The results of this large scale review of the empirical literature on goal setting, imagery, self-talk, arousal regulation, and multicomponent psychological skills training interventions suggest that when used for performance enhancement with competitive athletes, these interventions demonstrate vastly insufficient evidence of efficacy (for a comprehensive review, readers are referred to Gardner and Moore, 2006, pp. 63-96). These results, while not inconsistent with previous cautions (Dishman, 1983; Meyers, Whelan, & Murphy, 1996; Smith, 1989; Strean & Roberts, 1992), are in stark contrast to popular beliefs and current practice in sport psychology. It is important to note that there are numerous potential explanations for these results, ranging from methodological problems in the studies (such as small sample sizes) making the discovery of significant effects problematic, assumptions regarding the homogeneity of athletes as a single discreet population, lack of clear connection between intervention methods and psychological processes related to optimal performance, and poorly conceived and inappropriate measures of athletic performance. However, regardless of the reasons for the disappointing results that suggest a troubling lack of efficacy for long-favored interventions, the fact remains that true science places the burden of proof on those who make efficacy claims. As such, while proponents may develop better ways of evaluating, measuring, and delivering psychological skills training procedures, and may ultimately produce more favorable efficacy results, at present, the practitioner and consumer must carefully consider these disheartening findings.

The implications of these results for the evidence-based practice of sport psychology are quite clear. Of course, we cannot assume that these procedures do not work, as absence of evidence can never be interpreted as evidence of absence. However, the practitioner is nevertheless cautioned about enthusiastically adopting the fallacies of authority and tradition by assuming that because these procedures have been traditionally used, and highly acclaimed professionals promote their use, they must be efficacious. The practitioner embracing EBP should carefully consider these results, use the procedures cautiously, and provide clients with appropriate informed consent regarding their questionable efficacy. Due to the lack of positive efficacy findings for these procedures, it is also time to reconsider the theoretical models that are at the foundation of these procedures. Interestingly, these procedures were not originally developed for the enhancement of athletic performance, but were originally developed within the cognitive-behavioral tradition of clinical psychology in the 1970s for the amelioration of clinical dysfunction. Yet while the field of clinical psychology (and also counseling psychology and the sport sciences) has benefited from numerous and substantial advances over the past 30 years, the applied sport psychology domain has seldom reevaluated psychological skills training (PST) intervention techniques or the theoretical underpinnings of these procedures. It is thus suggested here that new theoretical models for understanding functional and dysfunctional athletic performance, and in turn, innovations in psychological procedures for athletic performance enhancement, need to be developed and systematically evaluated.

In contrast to the lack of efficacy data supporting traditional PST methods for the enhancement of athletic performance, there is actually a substantial body
of evidence for the treatment of mental health concerns among athletes. As noted by many structured qualitative reviews and meta-analyses, there are a number of psychological and psychopharmacological treatments that have garnered a “well-established” level of empirical support for the many psychological difficulties confronted by athletes and non-athletes alike (for a comprehensive review, see Gardner and Moore, 2006; Nathan and Gorman, 2002; and Roth and Fonagy, 2005). Of course, before implementing these otherwise empirically supported interventions, consideration should be given to the special nature of the athletic milieu, the needs and preferences of the athlete, and the overarching impact of the sport culture. Interestingly, and of major significance to the evolving discipline of sport psychology, there is a near complete absence of studies examining the impact that interventions for psychological health and athletic performance may have on each other. The potential interaction between these two areas (to date seen as separate and disconnected) is one of the guiding concepts in the promotion of the science and practice of clinical sport psychology, as defined by Gardner and Moore (2006).

**Implications of an EBP of Sport Psychology**

There are a number of significant implications in adopting EBP in sport psychology. Each of these implications also suggests questions that need to be answered. Thus, what follows is a listing of these implications and the questions that naturally flow from them:

1. **Practice informed by science will replace practice informed by tradition and authority.** If, as an ethical and professional imperative, EBP is adopted by the discipline of sport psychology, many long-held and cherished ideas and models will inevitably be reconsidered and possibly replaced. Critical thinking is in fact foundational to EBP, and careful and systematic review and knowledge of efficacy data is required to engage in cutting-edge practice. Thus, rather than accepting the notion, “What we have done must work because we have done it for a long time and the experts assure us that it works,” the EBP practitioner-scientist will critically examine the professional literature and the EBP scientist-practitioner will make a greater effort to expand the research agenda. In this regard, it is quite telling that for the most part, a perusal of PST studies in the 1980s and 1990s look remarkably similar to the PST studies published in the early part of the new millennium. In no other discipline of professional psychology can the same be said. Of course, there will be some discomfort along the way, as cherished notions are examined, reconsidered, and modified, and the experienced practitioner will be asked to adapt and possibly make fundamental professional changes. However, the inevitable result will be an increasingly fresh, energetic, and vibrant field from which greater innovation and evolution can occur. This innovation will inevitably include a renewed commitment to theory building, as the evolving scientific database will drive new ways of thinking about athletic performance, the athlete, and the relationship between overall well-being and athletic performance.

The adoption of EBP is also likely to impact both journal content and conference programming. As a result of the evolution of theory and the expansion of the scientific database, I believe that the contents of professional journals in sport psychology will look different, and the content of sport psychology conferences, often repetitive, will also appear renewed. It should be noted that a fundamental
goal of EBP is to allow practice to inform science and science to inform practice. This natural and healthy circularity is best seen as practice needs drive the search for new knowledge and greater understanding, which in turn results in new empirically derived information to better inform novel practice ideas. Subsequently, the successes or failures of these innovations will lead to even more quality research. As this process continually evolves, both the discipline and the consumer are the ultimate beneficiaries.

Several questions that will inevitably have to be answered in the development of an EBP of sport psychology include: (1) Are there comprehensive models of human behavior that allow for greater understanding, study, and intervention development for athletic performance enhancement and associated goals?, (2) What is the relationship between athletic performance and psychological well-being?, (3) Can one impact the other?, (4) Can standard psychological procedures often used in clinical/counseling settings in and of themselves enhance athletic performance?, and (5) What are the mental health outcomes of efforts at athletic performance enhancement?

2. It will be necessary to reconsider relevant psychological processes and mechanisms of action. An examination of the professional literature within sport psychology suggests an absence of due consideration of the psychological processes that impact the entire continuum of human behavior. For example, with a few notable exceptions, there has been little mention of concepts/constructs such as emotion regulation, experiential avoidance/experiential acceptance, rumination and worry, early maladaptive schemas, working memory, executive functioning, self versus task-focused attention, thought suppression, and cognitive avoidance (to name a few). These constructs have recently taken center stage in the scientific study of human behavior across a number of disciplines in professional psychology, and can offer a great deal toward a more comprehensive and scientifically informed discipline of sport psychology. It is very likely that a commitment to EBP would further drive the research agenda to consider such contemporary concepts.

Another related issue is enhanced consideration of what is often referred to interchangeably as “mechanisms of action” or “mechanisms of change.” These terms refer to the processes that are targeted (point Y) by an intervention (point X) to achieve a particular outcome (point Z). For example, a physician prescribing an antibiotic (point X) for the treatment of influenza does not directly target the overt signs and symptoms of the disease (point Z), although this outcome is certainly desired. Rather, he or she understands that the antibiotic’s “mechanism of action” is the elimination of the bacterial infection (point Y) that is responsible for the signs and symptoms of influenza. The consideration of these variables has been crucial within medicine, psychiatry, and clinical/counseling psychology, but has rarely been discussed in the sport psychology literature. To highlight, let’s consider the possibility that imagery training demonstrates adequate and incontrovertible efficacy for the enhancement of athletic performance (although it currently does not). Do we understand why (by what mechanism) imagery training works? For example, a practitioner engages the athlete in imagery training (point X), and assumes an outcome of enhanced athletic performance (point Z). But what process (point Y) has been impacted (reduced, enhanced, modified, etc.) for the outcome (point Z) to occur? Without this basic understanding, practitioners are nothing more than technicians who may know what to do but have no understanding of why they
are doing may work. This ultimately impacts the professional’s ability to understand when a technique is needed, why it might work, and why it might not be working. In addition, by understanding mechanisms of action, the practitioner is able to critically evaluate new methods for achieving outcomes by fully understanding what needs to be targeted for the intervention to be successful. Thinking about, evaluating, and ultimately understanding mechanisms of action are critical for the evolution of an EBP of sport psychology.

Similarly, an EBP of sport psychology will more thoroughly consider the relationships between constructs. For example, while it was once assumed that traumatic events directly result in long-term psychological distress, current evidence strongly indicates that in fact, this relationship is mediated (Baron & Kenny, 1986) by the construct of experiential avoidance (the unwillingness to remain in contact with private events such as thoughts, emotions, and physiological sensations). Thus, for those whose traumatic history ultimately results in psychological distress, the pathway is as follows: (a) The trauma leads to experiential avoidance, and (b) experiential avoidance in turn results in long-term psychological distress (Marx & Sloan, 2002).

There are numerous ways in which this process relates to sport psychology. For example, let’s consider the relationship between affective states and performance. A review of the literature suggests that at present, a clear and consistent relationship between affect and performance does not exist (Gardner & Moore, 2004). Models have been presented suggesting that this relationship is in fact idiosyncratic, and athletes vary greatly on levels of emotion necessary for optimal performance (Individual Zones of Optimal Functioning; Hanin, 2000). But what if a different focus is taken? Instead of simply assessing what level of affect leads to what level of performance, what will we find if we investigate what variable(s) mediates the relationship between affect and performance? If this question is instead asked and answered, interventions would no longer have to target the level of affect, but rather would target the process (i.e., variable) that is truly responsible for the performance outcome. In fact, questions and answers like this have dominated empirical clinical psychology for the last several decades, and the result has been ever-evolving interventions that directly target the underlying processes related to the desired outcome. Adoption of this approach to science and practice would lead to innovative interventions that would theoretically be more efficacious. This would, of course, require a significant shift in conceptual thinking within the field, yet this conceptual shift would help transform the field of sport psychology from a pseudoscience to a true scientific discipline.

3. Interaction between performance enhancement and enhanced psychological well-being. An EBP of sport psychology would also suggest an expanded consideration, in both research and practice, of the relationship between psychological well-being and athletic performance. As mentioned, the relationship between these two constructs has been missing from the literature and offers an exciting opportunity to better understand and serve athletic clientele. This expanded focus would involve a number of considerations. First, rather than the common dichotomous view of well-being (clinical vs. non-clinical), the discipline of sport psychology should view well-being on the same continuum that it views performance. Second, the search for mediating variables and mechanisms of action would inevitably require greater focus. Third, a philosophical shift would hopefully occur in which
the field of sport psychology would no longer be dominated by a strict focus on athletic performance and its enhancement. The full consideration of these issues would reformulate sport psychology into sport psychology. In essence, the science of psychology, and all that this implies, would become more foundational to sport psychology.

Conclusion

The primary purpose of this article has been to encourage thought and reflection among professionals involved in the multidisciplinary field of sport psychology. It is the hope of the author that this article will inspire discussion in students, scientists, and practitioners of sport psychology and expand the discussion about the role of science, clinical thinking, the state of the discipline, and the manner in which evidence-based practice may aid in the development of the field and enhance the lives of our athletic clientele.

References


