Attachment Based Coaching:
Neuroscience and the Integration of Heart and Soul in Sport

by
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Submitted in partial fulfillment of the requirements

for the degree of

Master of Arts in Counseling Psychology

Pacifica Graduate Institute

31 May 2014

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Abstract

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This thesis explores whether the coach–athlete relationship can be viewed as a relationship of attachment within which one can develop self-awareness, self-regulation, response flexibility, and resilience. Using hermeneutic and heuristic methodology, the findings suggest that an attachment-based approach to coaching can help coaches and athletes update their internalized models of attachment and move toward greater attachment security and earned security. Developing and integrating the brain structures associated with secure attachment, such as the insula and the right hemisphere of the brain, can lead to resilience, mental toughness, and performance enhancement in sport. Drawing from the literature on attachment, interpersonal neuroscience, and sport psychology, this thesis proposes a new model for training athletes called Attachment Based Coaching (ABC). ABC methods focus on attunement, resonance, contingent communication, breath, meditation, and mindfulness as well as interventions based on the psychological skills training approaches of relaxation, goal setting, imagery, and self-talk.

Acknowledgments

It is deeply moving to reflect on the love and support that has had such an impact on my life and on the writing of this thesis.

To my thesis advisor, Avrom Altman—your patience, humor, insight, and warmth have touched my heart. You are a mentor and a friend. Thank you Sensei.

To my dear friend and editor, Elaine Rosenberg—your contributions to Chapters I and II were invaluable. You are smart and talented and I am so thankful to have you in my life.

To my editor, Liza Gerberding—thank you for your energy and attention to detail. Your professionalism, speed, and support were essential to the completion of the final draft.

To my high school coach, Jack Rafter—the principles of Attachment Based Coaching find their origin in what I learned from you. Thank you Coach, for the example that you set all those years ago and for continuing to lead the way.

To my athletes—your devotion, trust, and enthusiasm are awesome, humbling, and inspiring. Thank you all.

To my mother, Nydia Panis, my sister RoseAmy Mouta, and my stepdad Ted Panis—words cannot convey my feelings. Thank you for being there through the triumphs and the trials.

To Lauren Capone—it has been a privilege to coach you for the better part of a decade. You are a champion. Thank you for the steadfast support that you have provided

every day through the writing of this thesis. Our connection is what makes all the difference.

To my father, Leon Mercur—I remember you standing by the track when I was a boy. I can still see you leaning against the fence with a cigarette in your lips and an analog stopwatch in your hand as I discovered the freedom and joy of running. Thank you for being my first coach. We all miss you.

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Chapter I
Introduction

This is our ritual. Twenty-five minutes before the race begins I help her with her wetsuit. Through our years together as coach and athlete we have streamlined this choreography. There is a method for putting on the suit to maximize performance. When I am not there, she can easily pull the sleeves around her shoulders and cinch up the back on her own. But there is something special about this last contact that we make before she immerses herself in the private and personal world of competitive endurance sport. We connect. We exchange our final words. I know what she needs to hear, if anything at all. More than words though, what happens between us is unspoken. It is an interpersonal regulation. I read her body, her posture, her breath. I look in her eyes. I can feel what she feels. Our connection is profound. It is special and rare. This connection is what makes all the difference.

The preceding passage reflects my experience with one athlete; however, what follows is a broader view of the coach–athlete relationship. I draw from the literature on attachment, neuroscience, sport psychology, parenting, couple therapy, even dog training to explore the question of whether the coach–athlete relationship can be viewed through the lens of attachment theory as well as the emerging fields of neuroscience and interpersonal neuroscience. Through the thesis, I explore whether the understanding and application of the principles of attachment and interpersonal neuroscience can improve athlete self-awareness, self-regulation, resilience, and performance within the arenas of

sport. I also consider whether an attachment-based approach to coaching can move coaches and athletes toward greater attachment security, coherence, and integration in their lives beyond the realms of sport.

Area of Interest

Before diving into the theories and their applications, it is important to consider why I am drawn to this material. I have been an athlete my entire life and I have been a coach throughout my adulthood. My life as an athlete informs my work as a coach. Similarly, my profession as a coach continues to inspire my growth as an athlete. It is an ongoing cycle of mutual and positive reinforcement—one of harmony, grace, and deep satisfaction. For me, these two pursuits are like twin stars, held in balance by a shared gravity.

The question of why I am drawn to this topic arose when I reflected upon the time that I have invested in the research and synthesis of this material and what the value of that effort might be. It has become clear that in researching and writing this thesis I am working to become the kind of coach that I have always hoped to have for myself. I am venturing to create the kind of coach–athlete relationships that I have always believed could be possible. And perhaps, I am endeavoring to resolve or repair something within myself. Engaging in this process has, without doubt, been an integrating force in my life.

At the center of this thesis is the question of whether the coach–athlete relationship can serve as a relationship of attachment within which one might update internal models of attachment and potentially develop what is known as an internalized secure base. In Chapter III, I put forth an approach called Attachment Based Coaching and suggest that it arises from providing an athlete with a secure, consistent, and reliable

relationship that is grounded in interpersonal rapport and a foundation of deep trust. Within such a relationship, an athlete may have the chance to develop capacities for self-awareness, self-regulation, resilience, flexibility, and toughness. Confident in the security of the coach–athlete relationship, the athlete may have a new source of courage. In the language of attachment, the coach–athlete relationship may provide the athlete with a secure base from which to take risks in training, racing, and ultimately in life beyond sport.

In *Parenting From the Inside Out*, pioneering attachment theorist and neurobiologist Daniel Siegel and child development specialist and psychologist Mary Hartzell (2003) explained that "relationships, both personal and therapeutic, appear to be able to help an individual develop from an incoherent (insecure) to a more coherent (secure) functioning of the mind" (p. 124). Leading theorist on the neuroscience of psychotherapy and relationships Louis Cozolino (2006, 2010) affirmed the importance of close relationships in life and indicated that such relationships can occur in a range of contexts. In *The Neuroscience of Human Relationships: Attachment and the Developing Social Brain*, Cozolino (2006) wrote, "The transformative power of intimacy has its roots in the evolution and development of the brain through parenting, friendship, and love. This same power is used in psychotherapy, education, and ministry" (p. 20).

Attachment specialist Sam Carr (2012) wrote in his book, *Attachment in Sport, Exercise, and Wellness*:

> Researchers have recently begun to appreciate the significance of "close" social relationships within sport and have explicitly recognized the benefits of sharing high-quality friendships (e.g. Smith, 2003; Weiss & Smith, 2002) and coach–athlete bonds (Jowett & Wylleman, 2006; Poczwardowski *et al*., 2006; Wylleman, 2000). Indeed, recent suggestions (e.g. Carr, 2009a; Jowett & Wylleman, 2006) have put forward attachment theory as a potentially fruitful lens for examining

> sporting relationships and there is potential that sporting figures, such as coaches, themselves have the potential to be considered "attachment figures." (p. 55)

I was pleased to find Carr's (2012) book in the process of my research. Until that point, I had not encountered any literature exploring the coach–athlete relationship as a relationship of attachment. I soon discovered, however, that Carr's book was focused on attachment as it is expressed within peer relationships in sport rather than on the coach–athlete relationship. As sports psychology researchers Louise Davis and Sophia Jowett (2010) explained in their article, "Investigating the Interpersonal Dynamics Between Coaches and Athletes Based on Fundamental Principles of Attachment," "Although the role of attachment has been widely discussed within the mainstream psychology literature, there is a relative paucity of theoretically driven research available on attachment as it relates to the sport context" (p. 126). I found nothing in the literature specifically about the coach–athlete relationship as a relationship of attachment leading to the development of updated models of attachment, earned security, co-regulation, self-regulation, and integration.

This thesis is an attempt to address that vacancy in the literature. Chapter II explores the research and literature on attachment and interpersonal neuroscience and considers whether it might be applied to a new understanding of the coach–athlete relationship as a potential relationship of attachment. Chapter III draws from the literature on attachment and interpersonal neuroscience as well as my personal experiences as a coach and an athlete. Chapter III suggests a range of coaching interventions to develop one's capacities for self-awareness, attunement, self-regulation, and resilience, all of which are hallmarks of secure attachment, and all of which may promote the enhancement of athletic performance.

In *Attachment in Psychotherapy*, clinical psychologist and leading attachment theorist David Wallin (2007) proposed that in psychotherapy it is the relationship itself that may be the fundamentally curative element. With respect to the therapeutic relationship, he wrote,

> In providing the patient with a secure base, we are offering a corrective relational experience that may be healing in its own right. From this perspective, the attachment bond the patient develops in relation to the therapist may be the key therapeutic intervention. (p. 257)

If the relationship between a coach and an athlete can function as a relationship of attachment, then Wallin's assertion should also apply to the transformative power of the coach–athlete relationship.

Guiding Purpose

My intention in writing this thesis is to connect my experiences as a coach, as an athlete, and as a student of psychology with my interests in attachment theory and neuroscience. I have attempted to present this thesis in a manner that is accessible to an audience beyond the fields of depth and counseling psychology. My hope is that it can appeal to sport psychologists and to coaches, to athletes, and even perhaps to a broader audience outside of psychology and sport.

Chapter II reviews research and literature from the fields of attachment, neuroscience, sport psychology, parenting, couple therapy, and dog training. Chapter III introduces a model for the coach–athlete relationship that aims to develop, in both coaches and athletes, capacities for self-awareness, self-regulation, response flexibility, and resilience. Each of those characteristics has been associated with secure attachment and the enhancement of athletic performance. Attachment Based Coaching may help

coaches and athletes move toward increased attachment security, greater neurologic integration, and enhanced athletic performance.

Rationale

The question of whether the coach–athlete relationship can function as a relationship of attachment is worth exploring. If the principles of attachment do function within the coach–athlete relationship, then coaches and sport psychologists will have a broader view of the dynamics and mechanics that have an influence on the relationship. Such an understanding may have therapeutic implications, may lead to the enhancement of athletic performance, and may have a positive impact on the lives of coaches and athletes beyond the arenas of sport.

This work begins an inquiry into whether the coach–athlete relationship may be viewed as a relationship of attachment within which an athlete's capacities for self-awareness, self-regulation, response flexibility, and resilience can be strengthened. Viewed another way one might ask: If the functions of self-awareness, self-regulation, response flexibility, and resilience, along with their associated brain structures, can be strengthened within the coach–athlete relationship, then can such improvements move a coach and an athlete toward greater security of attachment? If the answer to these questions is yes, then the fields of coaching, psychology, and sport psychology may have another way to approach coaches and athletes in an effort to improve performance and to enhance the quality of coaches' and athletes' lives. If the answer to these questions is no, then such an inquiry may still be of value as an exploration into the potential impact of secure or insecure attachment status on the coach–athlete relationship, whether the

influence of relationships on one's neurology affects performance in sport, and the ways in which involvement in sport affects one's neurology.

Methodology

In an effort to address vacancies in the attachment, sport psychology, and coaching literature, this thesis explores the question of whether the coach–athlete relationship can serve as a relationship of attachment that may help coaches and athletes move toward greater attachment security, coherence, and integration within and beyond the arenas of sport. Additionally, this thesis considers whether an application of the principles of attachment and interpersonal neuroscience within the coach–athlete relationship can improve athlete self-awareness, self-regulation, response flexibility, and resilience, and therefore enhance performance. In drawing from the literature on attachment, neuroscience, sport psychology, parenting, couple therapy, and animal training to explore the question of whether the coach–athlete relationship can be viewed through the lens of attachment theory and interpersonal neuroscience, this thesis has a firm grounding in hermeneutic research methodology (Moustakas, 1994). In drawing from my personal experiences as a coach and as an athlete, this work is also grounded in the heuristic research tradition (Moustakas, 1994).

Although there are limitations inherent in each of these research methodologies, it seems that an understanding of these limitations may allow for a balanced perspective on the material that follows. Hermeneutic research is constrained by knowledge of and access to the literature in the respective fields of study. It is also limited by the author's selection and interpretation of the texts, quotations, and citations that are included in the work. Heuristic research is limited by author bias, experience, and perspective. My hope

is that the reader will find the following work to be thorough and balanced, benefiting from the best of the hermeneutic and heuristic research traditions.

Ethical Concerns

There are a few ethical concerns that merit attention before proceeding. First, although Attachment Based Coaching is rooted in the literature and research of attachment theory and interpersonal neuroscience, and although it may have therapeutic outcomes, it is not a replacement for psychotherapy when psychotherapy is needed. There are occasions when a sport psychologist, an attachment-oriented therapist, or a therapist with a different theoretical orientation may be helpful to the coach, the athlete, or to the coach–athlete unit.

Along those lines, the study of attachment and relationships has the potential to be psychologically activating. As a researcher I found this to be the case and I caution the reader of such a possibility. For myself, in order to palliate this effect, I took my time in researching this material and writing this work. I let this project rise and settle in my psyche as I engaged with my athletes and immersed myself in the daily rhythms of a life in sport.

Overview of Thesis

Chapter II begins with a synopsis of attachment theory. It touches upon the evolution of the social brain as well as emotions, memory, and the brain structures that are associated with those functions. Chapter II then addresses the role of co-regulation and self-regulation in attachment. Mindfulness, sport psychology, and mental toughness are also examined in Chapter II.

Based on the findings of Chapter II, Chapter III details the Attachment Based Coaching model. Chapter III introduces a concept that I have developed called *emotional priming*. Chapter III also applies the principles of Attachment Based Coaching to the well-established psychological skills training interventions of self-talk, relaxation, imagery, and goal setting. Chapter III contains sections on present-centered awareness, meditation, and a focus on the breath. Chapter III closes with a perspective on the possible connections between attachment, resilience, integration, and mental toughness in sport. Chapter IV contains a summary and conclusions of this work.

Chapter II
Literature Review

Attachment

Attachment behavior functions to keep a child safe, both physically and emotionally, as the child grows and develops (Cozolino, 2006; Karen, 1994; Newton, 2008; Siegel, 1999; Wallin, 2007). Siegel and Hartzell (2003) described attachment and the three fundamental elements that contribute to secure attachment:

> Attachment is an inborn system of the brain that evolved to keep the child safe. It enables the child to (1) *seek proximity* to the parent; (2) go to the parent at times of distress for comforting as a source of a *safe haven*; and (3) internalize the relationship with the parent as an internal model of a *secure base.* This sense of security is built upon repeated experiences of being contingently connected with the attachment figure. The impact of these experiences is to provide children with an internal sense of well-being that enables them to go out into the world to explore and make new connections with others. (p. 104)

Davis and Jowett (2010) further explained these three elements:

> *Proximity maintenance* is fulfilled when the attached person feels the need to be in close proximity to the attachment figure. *Safe haven* is fulfilled when an attachment figure acts as a source of comfort and provides security for the attached individual during times of need. Finally, *secure base* is fulfilled when the attachment figure provides a platform for the attached individual to explore autonomous activities outside of the relationship. (p. 115)

Reflecting on the origins of attachment theory, Wallin (2007) indicated that "while Bowlby is commonly described as the father of attachment theory, there are those like Inge Bretherton (1995) who assert that the theory is actually the brainchild of two parents, the (m)other being Mary Ainsworth" (p. 11).

> Ainsworth was responsible for the "secure base" concept and had a pivotal role in moving attachment beyond the exclusive focus on proximity, so as to include the influence of the child's expectations of the caregiver—expectations that

> eventually gel in the mental maps or representations that Bowlby dubbed "internal working models." (p. 16)

Adding to the concepts of proximity and expectations, marriage and family therapist Susan Johnson (2004) described the role of emotion in the mobilization of attachment behavior in *The Practice of Emotionally Focused Couple Therapy*:

> In general, emotion activates and organizes attachment behaviors. More specifically, the building blocks of secure bonds are emotional accessibility and responsiveness. An attachment figure can be physically present but emotionally absent. . . . It is emotional engagement that is crucial and the trust that this engagement will be there when needed. (p. 26)

With respect to the importance of consistency and emotional engagement in the development of secure attachment, Wallin (2007) argued that "the research inspired by Bowlby's original insights has given psychotherapists an empirically grounded framework for understanding human development as a relational process. Attachment theory can thus be seen as a relational theory of development" (p. 167). Extending that logic, he wrote, "Attachment theory suggests that the therapist is potentially a new attachment figure in relation to whom the patient can develop fresh patterns of attachment" (p. 187). The Attachment Based Coaching model, as presented in Chapter III, suggests that a coach may potentially function as an attachment figure within the coach–athlete relationship, and that such a coach–athlete relationship may provide an arena for the development of new, more secure patterns of attachment.

The attachment research illustrates that individuals can develop attachment security later in life even if they did not have such security in their primary relationships (Cozolino, 2010; Karen, 1994; Siegel, 2010a, 2010b; Wallin, 2007). This is relevant to psychotherapy, and the literature suggests that it may be relevant to the coach–athlete relationship as well. Siegel and Hartzell (2003) asserted that

> changing attachment status as we develop is quite possible. Studies have shown that individuals can move from what was an insecure childhood attachment to a secure adult attachment status. These studies examine the finding of an "earned-security" status, one that is important for our understanding of coherent functioning and the possibilities for change. Individuals with earned security may have had troubled relationships with their parents during their own childhoods, but they have come to make sense of their childhood experiences and their impact on their development as adults. (pp. 123-124)

Psychiatrist Amir Levine and family therapist Rachel Heller (2010) stated, "Adult attachment theory has proven time and again that when it comes to attachment style, we're malleable. And it's never too late to learn new relationship skills" (p. 245). They also explained that mature cognitive and executive functions in adults allow for a shift in the drive for proximity maintenance. They wrote,

> Attachment continues to play a major role throughout our entire lifespan. The difference is that adults are capable of a higher level of abstraction, so our need for the other person's continuous physical presence can at times be temporarily replaced by the knowledge that the person is available to us psychologically and emotionally. (p. 24)

If the principles of attachment are applicable to the coach–athlete relationship, then Levine and Heller's (2010) contention has particular importance in the coach–athlete relationship. In training and in racing, the coach and athlete are regularly separated by significant distance, often for hours at a time. Athletes routinely train, for at least part of the year, in different geographic locations from their coaches. There are also occasionally competitions that coaches do not attend. However, as discussed in Chapter III, if an athlete is confident in the knowledge that the coach is available regardless of distance, and that contact can be established in a reasonable amount of time, then attachment security may continue to strengthen due to the coach's ongoing responsiveness and support. Carr (2012) noted,

> Bowlby outlined how the goal of the attachment system in adulthood (i.e. a perceived availability of the attachment figure) depends more significantly on cognitive factors such as the belief that lines of communication are open, the perception that physical accessibility exists if need be, and trust that the attachment figure will be available if necessary. (pp. 23-24)

Secure, Insecure-Anxious, and Insecure-Avoidant Attachment

It has been well established in the psychological literature that there are secure and insecure categories of attachment (Cozolino, 2006; Karen, 1994; Newton, 2008; Siegel, 1999; Wallin, 2007). Levine and Heller (2010) wrote,

> Adult attachment designates three main "attachment styles," or manners in which people perceive and respond to intimacy in romantic relationships, which parallel those found in children: Secure, Anxious, and Avoidant. Basically, *secure* people feel comfortable with intimacy and are usually warm and loving; *anxious* people crave intimacy, are often preoccupied with their relationships, and tend to worry about their partner's ability to love them back; *avoidant* people equate intimacy with a loss of independence and constantly try to minimize closeness. (p. 8)

Johnson (2004) noted that secure attachment is critical throughout the lifespan, and "is characterized by the capacity to maintain close supportive relationships while also creating and maintaining personal autonomy" (p. 245). On the other hand, Siegel and Hartzell (2003) explained,

> Insecure attachments come in several forms and arise from repeated experiences of nonattuned, noncontingent communication. When a parent is repeatedly unavailable and rejecting of the child, a child may become *avoidantly attached*, meaning that the child adapts by avoiding closeness and emotional connection to the parent. . . . An *ambivalently attached* child experiences the parent's communication as inconsistent and at times intrusive. The child cannot depend upon the parent for attunement and connection. When children experience inconsistent availability and unreliable communication from their parents they develop a sense of anxiety and uncertainty about whether they can depend upon the parent. They are not sure what to expect. This ambivalence creates a feeling of insecurity in the parent-child relationship, and continues forward in the child's interaction with the larger social world. (pp. 104-105)

Unfortunately, confusion is created for some when different authors use different terms to signify the same type of insecure attachment. In the attachment literature, the

terms *anxious* and *ambivalent* are both used to identify the same type of insecure attachment experiences and behaviors. Given that anxiety about the availability of the attachment figure is a key feature of this category of insecure attachment, the term anxious is used in this thesis. However, when quoting other authors, the term ambivalent may sometimes be included. Similarly, Wallin (2007) and other authors use the adult attachment style categories of secure-autonomous, preoccupied, and dismissing as parallels to the secure, anxious, and avoidant childhood categories (Karen, 1994; Siegel, 1999). In an effort to streamline this material, with the exception of quotations, the terms *secure* and *insecure*, along with the insecure subcategories *anxious* and *avoidant*, will be used in this thesis when referring to the attachment history of adults.

Regardless of attachment history or age, in an effort to reestablish contact with an attachment figure, people demonstrate what are known as activating strategies and protest behaviors (Karen, 1994; Levine & Heller, 2010; Wallin, 2007). Conversely, "A deactivating strategy is any behavior or thought that is used to squelch intimacy. These strategies suppress our attachment system" (Levine & Heller, 2010, p. 116). In *Becoming Attached: First Relationships and How They Shape Our Capacity to Love*, clinical psychologist Robert Karen (1994) made the link between attachment behaviors and their underlying psychological states.

> If protest, despair, and detachment are the three primary responses of the young child to separation from his mother, then we can see in these reactions . . . the basis for key emotional processes that govern our psychology. Protest is an embodiment of separation anxiety, despair is an indication of mourning, detachment is a form of defense. (p. 100)

Understanding the emotional states behind such common attachment behaviors as protest, despair, and detachment can provide valuable perspective to coaches, parents, or therapists as they engage their respective charges.

Karen (1994) also discussed the connection between attachment behaviors and exploration. “When attachment behavior is activated, often because of fear, exploratory behavior is shut down. When attachment—in the form of proximity or felt security—is achieved, attachment behaviors are shut down and exploration may begin again” (p. 204). Based on these findings, Chapter III proposes that attachment security within the coach–athlete relationship affords the athlete greater latitude for exploration and an increased willingness to reach beyond his or her comfort zones during the intensive demands of training and racing.

In *Mindsight*, Siegel (2010b) described avoidant attachment in terms of a tension between behaviors and beliefs that promote interpersonal distance and deeper unmet needs for human contact:

> The narrative of dismissing adults has a central theme: I am alone and on my own. Autonomy is at the core of their identity. Relationships don’t matter, the past doesn’t influence the present, they don’t need others for anything. Yet of course their needs are still intact. (p. 177)

Levine and Heller (2010) identified one of the striking paradoxes of the avoidant profile. They explained that for avoidant individuals,

> belief in self-reliance is very closely linked with a low degree of comfort with intimacy and closeness. Although avoidant individuals were found to have a great deal of confidence about not needing anyone else, their belief came with a price tag: They scored lowest on every measure of closeness in personal relationships. They were less willing to engage in self-disclosure, less comfortable with intimacy, and also less likely to seek help from others. (p. 119)

Siegel (2010b) highlighted some of the differences between avoidant and anxious attachment. He wrote that anxious attachment (which he called ambivalent) is characterized by uncertainty rather than distance.

> Ambivalent childhood attachment is associated with a history of inconsistent parental attunement combined with episodes of parental intrusiveness. The child cannot see himself clearly in the eyes of his caregiver, and the result is a confused sense of self. A central theme of the preoccupied narrative is: I need others but I can't depend on them. (p. 180)

Levine and Heller (2010) stated that people with an anxious attachment style

> have a super sensitive *attachment system*. . . . If you have an anxious attachment style, you possess a unique ability to sense when your relationship is threatened. Even a slight hint that something may be wrong will activate your attachment system, and once it's activated, you are unable to calm down until you get a clear indication from your partner that he or she is truly there for you and that the relationship is safe. (p. 79)

As a contrast, Levine and Heller explained that "the best predictor of happiness in a relationship is a secure attachment style" (p. 132), and that "individuals with a secure attachment style report higher levels of satisfaction in their relationships than people with other attachment styles" (p. 132). Chapter III argues that both types of insecure attachment may be disruptive to the coach–athlete relationship, due to either the excessive self-reliance of avoidance or the hypervigilance of anxiety.

Siegel and Hartzell (2003) wrote that "changing attachment status as we develop is quite possible. Studies have shown that individuals can move from what was an insecure childhood attachment to a secure adult attachment status. These studies examine the finding of an 'earned secure' status" (p. 123). Cozolino (2010) explained that "psychotherapy becomes a guided attachment relationship for the purposes of . . . eventual repair of insecure attachment schemas" (p. 334). The same holds true for other

important relationships of attachment and may apply to the coach–athlete relationship (Carr, 2012; Cozolino, 2006; Levine & Heller, 2010).

Attachment Schemas and Internalized Models of Attachment

Siegel and Hartzell (2003) wrote, "Our attachment relationships affect how we see others and how we see ourselves. Through repeated experiences with our attachment figures, our mind creates models that affect our view of both others and ourselves" (p. 23). New attachment figures can help to update one's models of attachment; however, as Wallin (2007) indicated,

> Our first relationships of attachment provide the original blueprint of the mind. The patterns of interpersonal communication in these relationships are internalized as the collection of structured patterns known as the self. . . . At the simplest level, whatever in the infant's nonverbal communication evokes an attuned response from the parent is ruled in, so to speak, while whatever evokes an aversive response (or goes unrecognized) is ruled out. As Main's research reveals, the rules infants derive from these earliest exchanges govern not only how they behave but also what they will allow themselves to feel, want, think, and remember. These rules are encoded in children's internal working models that preserve knowledge of their attachment histories, and shape their current and future relationships to others and to themselves (Main et al., 1985). (p. 84)

As a result, and for reasons having to do with the neurology of memory (Cozolino, 2010; Ekman, 2003; Siegel, 2010b; Wallin, 2007), internal working models of attachment can be quite tenacious.

> Early attachment schemas persist into adulthood, impacting our choice of partners and the quality of our relationships. Their impact goes beyond the ability to shape our relationships: They also influence our emotional life, immunological functioning, and our experience of self. (Cozolino, 2006, p. 148)

In *The Neuroscience of Psychotherapy*, Cozolino (2010) explained how attachment schemas form in early interactions with attachment figures and become established as implicit memories that operate without conscious recall.

> Bowlby believed attachment schemas to be a summation of thousands of experiences with caretakers that become unconscious, reflexive predictions of the behaviors of others. Attachment schemas become activated in subsequent relationships and lead us to either seek or avoid proximity. They also determine whether we can utilize intimate relationships for physiological and emotional homeostasis. These implicit memories are obligatory; that is, they are automatically activated even before we become conscious of the people with whom we are about to interact. (p. 198)

Cozolino also indicated that attachment schemas exert a powerful influence on some of the most enduring and intimate dimensions of one's life:

> They shape our first impressions, our reaction to physical intimacy, and whether we feel relationships are worth having. They trigger rapid and unconscious moment-to-moment approach-avoidance decisions in interpersonal situations. Attachment schemas are especially apparent under stress because of their central role in affect regulation. (p. 198)

Chapter III proposes that stress reduction within the coach–athlete relationship may help to create conditions for an increase in attachment security as well as the enhancement of athletic performance.

Relationship as the Integrating Factor

A common and recurrent theme in the attachment literature is that regardless of context, theoretical orientation, or approach, it is the provision of a consistent, attuned, and safe relationship that delivers the greatest leverage for therapeutic change and movement toward attachment security. Wallin (2007) made the following assertion:

> In the world according to Bowlby, our lives, from the cradle to the grave, revolve around intimate attachments. Although our stance toward such attachments is shaped most influentially by our first relationships, we are also malleable. If our early involvements have been problematic, then subsequent relationships can offer second chances, perhaps affording us the potential to love, feel, and reflect with the freedom that flows from secure attachment. Psychotherapy, at its best, provides just such a healing relationship. (p. 1)

Regarding the importance of attachment relationships and the fundamental need for attachment security, Wallin wrote,

> Bowlby's seminal insights as well as the research of Ainsworth, Main, and Fonagy point to the absolute centrality of attachment relationships as the crucibles within which our personalities take shape. By implication, attachment relationships may also be the setting in which—whether in love or psychotherapy—our early emotional injuries are most likely to be healed. The therapist, then, may be a new attachment figure in relation to whom the patient can develop fresh patterns of attachment. (p. 57)

In *The Developing Mind*, Siegel (1999) wrote about the impact of attachment on the growth and integration of structures in the brain, and how these structures can affect one's capacity to regulate internal states.

> The patient-psychotherapist relationship may provide a sense of proximity, a safe haven, and an internal model of security. These elements of an attachment relationship, within therapy or other emotionally engaging relationships such as romance and friendship, may possibly facilitate new orbitofrontal development and enhance the regulation of emotion throughout the lifespan. (p. 285)

Siegel explained that when significant relationships satisfy the attachment functions of safe haven, secure base, and proximity, that those relationships may evoke a therapeutic outcome. Furthermore, he contended that the interpersonal experiences in such relationships help to stimulate the growth and integration of brain structures associated with attachment security.

In *Attachment in Psychotherapy*, Wallin (2007) presented "a model of psychotherapy that involves the transformation of the self through relationship" (p. 2). The weight of research suggests that the same potential for growth and development is available in other emotionally important relationships (Cozolino, 2010; Johnson, 2004; Siegel, 2010a; Wallin, 2007). With respect to attachment and psychotherapy, Wallin (2007) wrote,

> For patients who are insecurely attached, the new attachment relationship with the therapist may be essential in order to integrate experiences that could not be accommodated in their first relationships. While the attachments of childhood initially structure the self, the patient's attachment to the therapist may later

> restructure it, changing an insecure working model to an earned secure one. (p. 85)

Siegel (1999) identified a number of features that can help people move toward attachment security within a broad range of intimate relationships. He proposed that

> a transforming attuned relationship would involve the following fundamental elements: contingent, collaborative communication; psychobiological state attunement; mutually shared interactions that involve the amplification of positive affective states and the reduction of negative ones; reflection on mental states; and the ensuing development of mental models of security that enable emotional modulation and positive expectancies for future interactions. (p. 118)

Chapter III contends that all of these elements are potentially available inside of the coach–athlete relationship.

Whether the new relationship of attachment is formed in psychotherapy, in sport, or in love, connections deep within the brain are being revised and the mind becomes more integrated (Cozolino, 2006, 2010; Siegel, 1999, 2010a). Cocreator of imago relationship therapy Harville Hendrix (2011) clarified,

> What happens is not so much the healing of childhood wounds, which may in fact not be healable, but the creation of a relationship in which two persons are reliably and sustainably present to each other empathically. This new emotional environment develops new neural pathways. (pp. xiii-xiv)

Regarding attachment, the therapeutic process, and mechanisms of change, Cozolino (2006) noted,

> When clients come to therapy, they carry the unconscious expectation that they will be treated as they have been treated before. One of the therapist's most essential acts is to thwart these negative expectations with kindness, empathy, and patience. . . . Put another way, compassion, warmth, and love have the power to change our brains. (p. 315)

Johnson (2004) addressed the role of immediacy within the relationship as a part of the therapeutic process. She wrote that

> the arena of change is the present relationship. The client is not taken back to the past to gain insight and resolve past hurts; rather, the echoes of the past are dealt with where they are lived, in the present. If the present relationship can be made more whole and secure, the past has been changed, in that its ramifications have been modified. The past, in the form of personal sensitivities, is then integrated in a new way into the present. In addition, new experiences in the present challenge partners' working models, which are reflections of past experience, thus creating new expectations and new ways of regulating affect. Through the clearer, more coherent, and more complete processing of present attachment experiences, both the past and the present are then reorganized. (p. 211)

Chapter III discusses the role of immediacy within the coach–athlete relationship.

Wallin (2007) suggested that it is the "*relational/emotional/reflective process* at the heart of an attachment-focused therapy" (p. 3) that facilitates integration. As proposed in Chapter III, these very processes are at the core of Attachment Based Coaching. In *The Mindful Therapist*, Siegel (2010a) made a similar claim regarding the importance of the relationship itself to therapeutic outcomes:

> Research suggests that our presence as medical or mental health clinicians, the way we bring ourselves fully into connection with those for whom we care, is one of the most crucial factors supporting how people heal—how they respond positively to our therapeutic efforts. Whatever the individual approach or clinical technique employed, the therapeutic relationship is one of the most powerful determinants of positive outcome in a range of studies of psychotherapy (see Norcross, Beutler, & Levant, 2005). (p. xi)

Wallin (2007) noted, "As the original attachment relationship(s) allowed the child to develop, it is ultimately the *new* relationship of attachment . . . that allows the patient to change" (p. 3).

Evolution of the Social Brain

According to Siegel (2010a), "We are hard-wired to connect with one another" (p. 76). He explained,

> From the very beginning of extrauterine life, our brains seek positive forms of *contingent communication* in which we send a signal that is hopefully received, made sense of, and responded to in a timely and effective manner. . . . As our

> social brains send and receive signals, they also evaluate the safety or danger of our current environment. As patterns of contingent communication unfold, the baby creates repeated internal neural firing patterns of safety: I am seen, I am understood, I am cared for. (p. 76)

Attuned and contingent parent-child interactions promote secure attachment (Siegel, 2010a). Insecure attachment, on the other hand, arises from nonattuned, noncontingent communication (Cozolino, 2006; Hughes & Baylin, 2012; Karen, 1994; Siegel, 2010a; Wallin, 2007). Wallin (2007) described parental behaviors that contribute to insecure attachment and the characteristic responses of insecurely attached infants:

> The mothers of avoidant infants had been seen in the home to be rejecting of attachment behavior: They were emotionally unavailable and uncomfortable with physical contact, and they tended to withdraw when their infants were sad. Not infrequently the infants reacted to their mothers' rejections with anger. For these avoidant infants it was adaptive, therefore, to inhibit the communication of attachment needs—both to keep from being rejected and to sidestep the anger that threatened to push mother away when the infant's needs were frustrated. (pp. 21-22)

Wallin indicated that anxiously attached infants received inconsistent and unpredictable responsiveness from their mothers. As a result, anxiously attached infants adapted by communicating "their attachment needs in a persistent and unmistakable fashion—as if keeping up the pressure might keep up the care" (p. 22).

Regarding insecure attachment behaviors, Siegel and Hartzell (2003) noted that "the processes that began as 'healthy' and necessary adaptations in childhood may become impediments to healthy adult relationships" (p. 135). It is important to bear in mind that both secure and insecure attachment behaviors function to ensure proximity to the attachment figure, and that proximity, particularly in infancy, is imperative for survival (Siegel, 1999, 2010a; Wallin, 2007). Wallin (2007) explained,

> Bowlby's core contribution was to recognize the biologically based evolutionary necessity of the attachment of a child to its caregiver. Bowlby understood that the

> primal nature of attachment as a motivational system is rooted in the infant's absolute need to maintain physical proximity to the caregiver, not just to promote emotional security but in fact to ensure the infant's literal survival. . . . Thus what Bowlby called the attachment behavioral system was "designed" by evolution to enhance the probability of survival. (pp. 11-12)

Cozolino (2010) underscored this position saying, "We need to always keep in mind that as primates, attachment equals survival and abandonment equals death" (p. 285). Regarding natural selection and the development of the attachment behavioral system, Karen (1994) proposed that Bowlby "saw himself as an evolutionist and believed that the formation of affectional ties—the development of love—was one of the greatest achievements of human evolution" (p. 427).

Emotions

In *Emotions Revealed*, Paul Ekman (2003), expert on nonverbal behavior and communication and the physiology and expression of emotion, wrote,

> Emotion is a process, a particular kind of automatic appraisal influenced by our evolutionary and personal past, in which we sense that something important to our welfare is occurring, and a set of physiological changes and emotional behaviors begins to deal with the situation. (p. 13)

"The most common way in which emotions occur is when we sense, rightly or wrongly, that something that seriously affects our welfare, for better or worse, is happening or about to happen" (p. 19). Understood in this way, it becomes clear that emotion plays a key role in the attachment process. Johnson (2004) wrote, "It is emotion that organizes attachment behaviors, that orients and motivates us to respond to others and communicates our needs and longings to them" (p. 13).

Ekman (2003) identified seven emotions that "have a distinct, universal, facial expression: sadness, anger, surprise, fear, disgust, contempt, and happiness" (p. 58). Each emotion "generates a unique pattern of sensations in our body" (p. xix).

> When we are in the grip of an emotion, a cascade of changes occurs in split seconds, without our choice or immediate awareness, in: the emotional signals in the face and voice; preset actions; learned actions; the autonomic nervous system activity that regulates our body; the regulatory patterns that continuously modify our behavior; the retrieval of relevant memories and expectations; and how we interpret what is happening within us and in the world. These changes are involuntary; we don't choose them. Psychologist Rober Zajonc calls them inescapable. (p. 65)

As detailed in Chapter III, this understanding may be important for both coaches and athletes. This thesis proposes that there is a connection between Ekman's (2003) assertion that emotions occur when individuals sense that something that seriously affects their welfare is happening or about to happen and Johnson's (2004) claim that emotion organizes attachment behavior. Furthermore, Ekman (2003) noted that each emotion "generates a unique pattern of sensations in our body" (p. xix). This may be important for athletes, because becoming aware of these sensations can lead to improved self-regulation. It may be important for coaches because an appreciation that emotion is expressed through the body might help coaches attune more accurately to their athletes.

Psychologists Daniel Hughes and Jonathan Baylin (2012), authors of *Brain Based Parenting: The Neuroscience of Caregiving for Healthy Attachment*, explained, "We know that a person—whether infant, child, teenager, or adult—is experiencing an emotion by how the emotion is manifested or expressed in the person's body" (p. 149). Psychologist John Gottman (1997) noted, in *Raising an Emotionally Intelligent Child*, "that people who can most accurately tune in to others' emotions have physiological responses that mimic the people they are observing" (p. 77). This ability to feel another person's bodily experience is at the very center of Attachment Based Coaching.

Memory

Emotion, memory, and attachment are connected. Cozolino (2010) explained, "At birth, the more primitive structures of our brains responsible for social and emotional processing are highly developed, while the cortex develops slowly through the first decades of life" (p. 309). As a result of this developmental timetable, emotion and the regulation of emotion play critical roles in the social process of attachment. The prefrontal cortex, which is responsible for higher cognitive and executive functions, emotion regulation, reflection, and impulse control, develops after primary models of attachment are formed and internalized (Cozolino, 2006, 2010; Hughes & Baylin, 2012).

> Much of our most important emotional and interpersonal learning occurs during our first few years when our primitive brains are in control. We mature into self-awareness having been programmed by early experience with sensory and emotional assumptions that we accept as truth. As a result, a great deal of extremely important learning takes place before we are consciously aware we are learning (Casey, Galvan, & Hare, 2005). For most of us, the early interactions that shape our brains remain forever inaccessible to conscious memory, reflection, or modification. . . . Early experiences shape structures in ways that have a lifelong impact on three of our most vital areas of learning: attachment, emotional regulation, and self-esteem. These three spheres of learning establish our abilities to connect with others, cope with stress, and feel we are loveable and have value. (Cozolino, 2010, p. 309)

Siegel (2010b) explained the process by which experiences become encoded as memory. He wrote,

> Experience for the brain means neural firing. When we have an "experience," clusters of neurons are activated to send electrical signals down their long lengths. . . . Neural firing can create new synapses, strengthen existing ones, alter the packets of neurotransmitters that are released or the receptors that receive their messages, and even stimulate the growth of new neurons. It can also thicken the insulating myelin sheath around connecting fibers, increasing the speed of electrical transmission. . . . In memory terminology, an experience becomes "encoded" by the firing of neurons in groups. The more often these neural clusters, or "neural net profiles," fire, the more likely they are to fire together in the future. (pp. 147-148)

Drawing connections among memory, emotion, and the internalization of attachment schemas, Ekman (2003) indicated that "behavior patterns that were acquired early in life, that were learned during a highly intense and dense emotional episode or series of episodes, will be harder to modify or unlearn" (p. 71).

Implicit and explicit memory. It is well documented in neuroscientific research that memories are either implicit or explicit (Cozolino, 2006, 2010; Hughes & Baylin, 2012; Siegel 1999, 2010b; Wallin, 2007). Siegel and Hartzell (2003) explained,

> Memory is the way the brain responds to experience and creates new brain connections. The two major ways connections are made are the two forms of memory: implicit and explicit. Implicit memory results in the creation of the particular circuits of the brain that are responsible for generating emotions, behavioral responses, perception, and probably the encoding of bodily sensations. Implicit memory is a form of early nonverbal memory that is present at birth and continues throughout the life span. (p. 22)

"Deep associations among intimacy, anxiety, love, and shame are forged in early implicit memory and become the core of our attachment schema and our ability to regulate our emotions" (Cozolino, 2006, pp. 129-130).

> The fascinating feature of implicit memory is that when it is retrieved it lacks an internal sensation that something is being "recalled" and the individual is not even aware that this internal experience is being generated from something from the past. . . . What is particularly amazing is that our brains can encode implicit memory without the route of conscious attention. This means that we can encode elements into implicit memory without ever needing to consciously attend to them. (Siegel & Hartzell, 2003, p. 23)

In addition to the implications associated with attachment, Chapter III proposes that implicit memory may also be relevant to sport with regard to its role in one's awareness of mechanics when performing techniques as well as the locus of one's attention in training and competition.

"In contrast to implicit memory, when explicit memory is recalled it does have the internal sensation of recollection. For . . . explicit memory, conscious attention is required" (Siegel & Hartzell, 2003, pp. 23-24). The focus of conscious attention in order to encode explicit memory is highlighted in Chapter III when discussing interventions that may enhance athlete self-awareness, self-regulation, and performance.

Hippocampus. According to the literature on attachment and neuroscience (Cozolino, 2006, 2010; Hughes & Baylin, 2012; Linden, 2011; Siegel, 1999, 2010b; Siegel & Hartzell, 2003; Wallin, 2007), the hippocampus is a brain structure necessary for the formation of new, explicit memories. Early in life, however, the hippocampus and other structures of the brain necessary for the formation of explicit memory are not well developed (Cozolino, 2006).

> Although most of our important social and emotional lessons occur during our early years, we have little to no conscious memory of learning them. This phenomenon, referred to as *infantile amnesia*, is due to the immaturity of hippocampal-cortical networks, whose functioning is required for the conscious recollection of the learning process (referred to as source attribution). Despite our lack of explicit memory for these experiences, they come to form the infrastructure of our lives. We experience these early lessons as the "givens" of life, rarely noticing their existence or questioning their veracity. We seldom realize that they are influencing and guiding our moment-to-moment experiences. (p. 129)

Later in life, once the hippocampus has developed, focused attention can help to harness the power of the hippocampus to encode explicit memory (Siegel & Hartzell, 2003). Although the hippocampus is necessary for the formation of explicit memory, certain experiences can interfere with the function of the hippocampus and the encoding of memories. Stress, for example, can affect memory; moderate amounts of stress tend to facilitate memory whereas large amounts of stress impair memory (Cozolino, 2010; Siegel, 1999).

> Under . . . highly stressful conditions, the fight–flight–freeze response floods the body with the hormone cortisol, a chemical that has been shown to block hippocampal function. . . . Anything that can temporarily shut down the hippocampus can also block the formation of explicit memories. . . . Paradoxically, the same intense reaction that led to the blackout and to the blockage of explicit memories would simultaneously heighten the encoding of implicit memory by way of the amygdala's release of another fight–flight–freeze chemical—adrenaline. High levels of adrenaline act to sear into implicit memory traces of the original traumatic experience—the feeling of terror, the perceptual details, the behavioral reactions characteristic of fight–flight–freeze, and any bodily sensations of pain that were suffered. (Siegel, 2010b, p. 157)

The functions of the hippocampus and the amygdala in the encoding of explicit and implicit memory may have relevance to the question of attachment in the coach–athlete relationship. The attachment histories and schemas that coaches and athletes bring to the coach–athlete relationship, as with all relationships, are directly impacted by the development and function of the amydala, the hippocampus, and other structures of the brain (Cozolino, 2006, 2010; Hughes & Baylin, 2012; Siegel, 1999, 2010b; Siegel & Hartzell, 2003; Wallin, 2007). A more nuanced perspective on the role of focused attention and hippocampal involvement in sport, however, may follow from Siegel's (2010b) assertion: "Direct attention harnesses the hippocampus; indirect attention—attention that does not involve your focal, conscious attention—encodes the memory without hippocampal involvement" (p. 151). As discussed in Chapter III, this finding suggests that the quality of focus, attention, and awareness that coaches and athletes bring to technique and self-talk may have an impact on the memory and learning that occurs in training and racing, and may therefore have an impact on performance in sport. Siegel (2010b) wrote,

> It requires focused attention to activate the hippocampus—to literally link together the neurally distributed puzzle pieces of implicit memory. When the images and sensations of experience remain in "implicit-only" form, when they have not been integrated by the hippocampus, they remain in unassembled neural

> disarray, they are not tagged as representations derived from the past. . . . Such implicit-only memories continue to shape the subjective feeling we have of our here-and-now realities . . . but this influence is not accessible to our awareness. We have to assemble these implicit puzzle pieces into explicit form in order to be able to reflect on their impact in our lives. (pp. 154-155)

Chapter III suggests that the focused attention of both coach and athlete, as well as their awareness of technique, self-talk, and other mental modes, can help to transition old, disorganized, implicit forms of memory into newly structured and integrated explicit memories.

Amygdala and Attachment

The amygdala is another brain structure that is associated with attachment. Cozolino (2010) indicated that "the amygdala is at the center of neural networks involving both fear and attachment" (p. 281). He added that "the direct connection of the amygdala with the autonomic nervous system serves to translate its appraisals into immediate survival reactions. Amazingly, the amygdala achieves a high degree of maturity by the eighth month of gestation" (Cozolino, 2006, p. 57). Cozolino (2010) also explained that "the hippocampal and cortical networks that eventually organize and inhibit the amygdala grow gradually through childhood" (p. 281).

> It is an unfortunate twist of evolutionary fate that the amygdala is mature before birth while the systems that inhibit it take years to develop. This leaves us vulnerable to overwhelming fear with little or no ability to protect ourselves. On the other hand, evolution has also provided us with caretakers who allow us to link into their developed cortex until our own is ready. The way they protect us from fear and modulate our anxiety becomes a model upon which our own brain develops. Thus, we use proximity to our parents as our key method of fear regulation. . . . Our attachment schemas come to reflect the success or failure of how we and our parents navigate this process. (p. 253)

Wallin (2007) described the link between the processes of attachment and the co-regulation of affect and arousal:

> From the moment they are born, babies are subject to feelings of distress that they are utterly unequipped to manage on their own. To experience the "felt security" that has been described as the set goal of attachment, babies depend on the attachment figure to help them modulate their overwhelming affects. (p. 48)

Chapter III discusses the potential, within coach–athlete relationships, for the co-regulation of affect and arousal.

Regarding the amygdala's processing speed, Cozolino (2006) wrote, "The prime directive of the amygdala is to pair stimuli with a fear response to protect us. The amygdala works so fast that it can pair stimuli and a fear response far ahead of conscious awareness" (p. 60).

> While it takes approximately 500-600 milliseconds for an experience to register in conscious awareness, the amygdala can react to a potential threat in less than 50 milliseconds. This means that by the time we become consciously aware of an experience, it has already been processed many times in our more primitive neural networks, activating memories and triggering implicit memories organized by past learning. This unconscious backdrop shapes the perception of what is being consciously attended to. . . . When we finally become aware of the outcome of this process, we experience it as if we are living in the present, and act with free will based on conscious deliberation. There is extensive evidence that this is not really the case. We actually live about 500 milliseconds after the moment and our past learning severely limits our free will. (Cozolino, 2010, pp. 312-313)

Cozolino highlighted a paradox that arises from the sophistication and the sensitivity of the human brain. He wrote,

> Evolution's legacy is a complex brain, vulnerable to a variety of factors that can disrupt the growth and integration of important neural networks. The field of psychotherapy has emerged because of the brain's vulnerability to these developmental and environmental risks. (pp. 10-11)

Brain Science

Right hemisphere. The attachment and neuroscience literature indicates that the right hemisphere of the brain is involved in a broad range of processes fundamental to attachment. Because of the right hemisphere's significant involvement in self-awareness

and self-regulation, there may be a link between right brain integration and performance in sport. Bridging attachment, co-regulation, and brain development, Allan Schore (2008), known for his leadership in integrating neuroscience and attachment theory, wrote,

> At the most fundamental level, attachment experiences with a sensitive primary caregiver promote brain development, specifically of the right brain, which for the rest of the life span is dominant for emotional functions, nonverbal communication, the regulation of bodily states, stress, empathy, intuition, and indeed survival. (p. xii)

Regarding the right brain, Cozolino (2006) explained that "the right hemisphere experiences a growth spurt during the first 18 months of life" (p. 70). Siegel (1999) characterized "the orbitofrontal cortex in the right hemisphere . . . as a crucial area for integrating memory, attachment, emotion, bodily representation and regulation, and social cognition" (p. 40). "The right brain is grounded in bodily and emotional experience" (Cozolino, 2006, p. 67). Siegel and Hartzell (2003) wrote that "the right-hemisphere brain processes are important for self-regulation, a sense of self, and empathic connections to others" (p. 99).

Relevant to attachment, sport, and life beyond sport, Siegel (2010b) noted that "interoception—our perception of our internal bodily state—is mediated primarily via the right brain" (p. 112). "Internal sensations include bodily motion and physiological status of the body (such as states of arousal, temperature, and muscle tension). These are registered in the somatosensory cortical areas, which are especially integrated on the right side of the brain" (Siegel, 1999, p. 165). Ruth Newton (2008), a clinical psychologist specializing in attachment and affect regulation, wrote in *The Attachment Connection*:

> The right hemisphere appears to be the dominant hemisphere for body regulation (Schore 1994; Spence, Shapiro, and Zaidel 1996). In fact, the right hemisphere is

> the dominant hemisphere for the comprehension of nonverbal emotional communication, including interpreting the tones and contours of voices, faces, and gestures. (p. 44)

Chapter III proposes that strengthening and integrating right brain functions in coaches and athletes may serve to enhance attachment and athletic performance.

Insula. Teacher, researcher, and couple therapist Stan Tatkin (2011) described another brain structure called the insula. He wrote that the insula "gives us the ability to pick up on our own body sensations, gut feelings, and heart beat. . . . The insula is [also] a vital contributor to feeling empathy" (p. 37). The ability to sense one's internal state is essential for the performance oriented athlete, and the experience and expression of empathy is vital for attachment security (Cozolino, 2006; Gottman, 1997; Hughes & Baylin, 2012; Siegel, 1999, 2010b; Wallin, 2007). Strengthening the insula may be an integral part of the process in an attachment-based approach to coaching athletes.

According to Hughes and Baylin (2012),

> The insula is now considered to be the "visceral" brain . . . where information is received from the activity of our visceral organs, including the heart, lungs, and gut (Craig, 2009). People who are keenly aware of their bodily sensations, including the beating of their hearts, have very active insulas, especially on the right side of the brain. (pp. 36-37)

They noted that "people who report little awareness of feelings, including bodily sensations, have sluggish insulas and tend to lack intuitive knowledge about other people's internal states" (p. 37). Siegel (2010b) also wrote about the role of the insula in feeling one's own internal states, attuning to the internal states of others, and the experience of empathy:

> Our awareness of another person's state of mind depends on how well we know our own. The insula brings the resonating state within us upward into the middle prefrontal cortex, where we make a map of our internal world. So we feel others' feelings by actually feeling our own. . . . The insula is the key: When we can

> sense our own internal state, the fundamental pathway for resonating with others is open as well. (p. 62)

This is a vital distinction for coaches. Chapter III suggests that when a coach engages in activities that strengthen the insula, such as meditation (Hughes & Baylin, 2012; Wallin, 2007), it may allow for an increase in the coach's empathy toward athletes and an improvement in the coach's capacity to feel the internal experience of the athlete. The development of such capacities for interpersonal resonance and empathy is pivotal to the Attachment Based Coaching model.

Anterior cingulate cortex. The insula is part of a network of structures that are involved in attachment and empathy. "As a key part of the parental empathy system, the insula, specifically the front or anterior region of this structure, is highly connected to another brain region that is very important to parenting, the anterior cingulate" (Hughes & Baylin, 2012, p. 38). "The anterior cingulate also functions as a vital bridge between emotion regulation and reflective processes in a parenting brain, literally connecting the core parenting process to the highest human cognitive abilities" (p. 38). Hughes and Baylin also described a particular type of brain cell that connects the insula and the anterior cingulate. The presence of this type of cell seems to underscore the fact that humans have evolved a strong capacity to attune to each other, feel each other, and care for each other.

> A unique kind of brain cell, found only in mammals that exhibit heightened awareness of each others' emotions, especially states of distress, links the anterior insula to the anterior cingulate. These cells are called von Economo neurons. . . . Von Economo neurons are most plentiful in humans, but are also found in a few other mammals that we know to be quite empathic: elephants, great apes, dolphins, and whales (Allman, Tetreault, Hakeem, & Park, 2011). (pp. 38-39)

It is well documented in the attachment and neuroscience literature that the insula and the anterior cingulate cortex are a part of the neural networks involved in empathy, emotion regulation, and resonance (Hughes & Baylin, 2012; Siegel, 2010b; Tatkin, 2011). Siegel (2010b) wrote,

> The anterior cingulate cortex (ACC) . . . straddles the boundary between our thinking cortex and our feeling limbic regions. In addition to registering physical sensations from the body and feelings from our social interactions, it regulates the focus of our attention. Because it links body, emotion, attention, and social awareness, the ACC plays a key role in the resonance circuitry that lets us feel connected to others and to ourselves. (In fact, the more we can sense our own internal world, utilizing the ACC and related areas such as the insula . . . the more we can feel the internal world of someone else). (p. 125)

This ability to feel one's own internal world, and the associated capacity to feel into the internal world of another, is at the heart of Attachment Based Coaching.

Although the research identifies individual neural structures, it is important to clarify that they do not function in isolation. The neural structures featured in this chapter are those highlighted in the literature for their involvement in attachment, arousal, co-regulation, and self-regulation. Interventions applicable to the coach–athlete relationship that have been shown to help strengthen these neural structures and their attachment related capacities are discussed in Chapter III.

Polyvagal Theory

Stephen Porges (2011), groundbreaking neuroscientific theorist and professor of psychiatry, proposed in *The Polyvagal Theory: Neurophysiological Foundations of Emotions, Attachment, Communication, and Self-Regulation* that the human capacity to regulate emotion and arousal, to respond to danger, to engage socially, and to make effective distinctions between safety and threat is grounded in the development of attachment-based brain structures and the nervous system in its broad distribution

through the body. An understanding of polyvagal theory is built upon an understanding of the structure and function of the nervous system. Cozolino (2006) offered the following description:

> The nervous system is divided into the central (CNS) and the peripheral (PNS) nervous systems. The CNS includes the brain and the spinal cord, and the PNS is comprised of the autonomic and somatic nervous systems. The autonomic and somatic systems are involved in the communication with sense organs, glands, and, thus, the whole body. The autonomic nervous system has two branches: the sympathetic and parasympathetic systems. (p. 40)

Sympathetic and parasympathetic systems. The sympathetic and parasympathetic nervous systems and their regulation are involved in the energy mobilization of fight–flight responses and the energy conservation of rest and recovery. The fight–flight response isolates people whereas relaxation allows for closeness and intimacy. Cozolino (2006) explained that "the sympathetic system controls the activation of the nervous system in response to threat or other forms of motivation. The parasympathetic system supports the conservation of bodily energy, immunological functions, and the repair of damaged systems" (p. 40). Siegel (1999) wrote,

> The autonomic nervous system helps to control the body's state of arousal. This system can induce excitatory, arousing, energy-consuming bodily states, which are produced by the activation of . . . the "sympathetic branch." Examples of physiological responses to the sympathetic branch are increases in heart rate, respiration, sweating, and states of alertness. The autonomic nervous system also includes an inhibitor, de-arousing, energy-conserving portion called the "parasympathetic branch." The parasympathetic branch mediates responses such as decreases in heart rate, respiration, and states of alertness to the outside world. (pp. 278-279)

Learning to sense and regulate arousal and relaxation is a crucial skill for both training and racing. Such internal regulation is essential for balance, intimacy, and integration in life beyond sport as well.

Vagal system. In *Raising an Emotionally Intelligent Child*, professor emeritus of psychology John Gottman (1997) described the concept of vagal tone. He wrote,

> The vagus nerve is responsible for many functions of the parasympathetic branch of the autonomic nervous system. While the sympathetic branch accelerates functions such as heart rate and breathing when a person is under stress, the parasympathetic branch acts as a regulator, putting the breaks on these involuntary functions, keeping the body from speeding its systems out of control.
>
> We use the term "vagal tone" to describe a person's ability to regulate the involuntary physiological processes of the autonomic nervous system. Just as kids with good muscle tone excel at sports, kids with high vagal tone excel at responding to and recovering from emotional stress. . . . These children are good at soothing themselves, focusing their attention, and inhibiting action when that's what's called for. (pp. 38-39)

Cozolino (2006) provided an explanation of the vagus nerve and its role in the regulation of the autonomic nervous system.

> The tenth cranial nerve, also called the vagus, is actually not a single nerve but a complex communication system between the brain and body. The vagus system extends from the brainstem to multiple points within the body, including the heart, lungs, throat, and digestive system. . . . The vagus system is a central component of the autonomic nervous system. In the absence of external challenge, the vagus works to enhance digestion, growth, and social communication. When a challenge does arise, a decrease in vagal activation facilitates sympathetic arousal, high energy output, and the fight–flight response. The vagus allows us to maintain continued social engagement by modulating and fine-tuning sympathetic arousal during emotional interpersonal exchanges. (pp. 60-61)

With the polyvagal theory, Porges (2011) explained the neural connection of emotion and arousal to the muscles of the heart, face, and vocal apparatus. "The polyvagal theory links the evolution of the neural regulation of the heart to affective experience, emotional expression, facial gestures, vocal communication, and social behavior that is responsive to the behavior of others" (p. 16). Porges's theory also describes the neural basis for the fight–flight response, the freeze adaptation, as well as the social engagement process.

The freeze or immobilization adaptation is "dependent on the oldest branch of the vagus nerve (an unmyelinated portion originating in an area of the brainstem known as the dorsal motor nucleus of the vagus)" (Porges, 2011, p. 16). Fight or flight behaviors, which Porges called mobilization, are "dependent on the functioning of the sympathetic nervous system, a system associated with increasing metabolic activity and increasing cardiac output (e.g., faster heart rate, greater ability of the heart to contract)" (p. 16). Porges called the third adaptation of the vagal system "social communication or social engagement" (p. 16). This adaptation down-regulates the sympathetic nervous system, de-activates the fight–flight response, and allows for close interpersonal contact and intimacy. The social engagement adaptation controls "facial expression, vocalization, [and] listening" (p. 16) and is "dependent on the myelinated vagus, which originates in an area of the brainstem known as the nucleus ambiguus. The myelinated vagus fosters calm behavioral states by inhibiting the influence of the sympathetic nervous system on the heart" (p. 16).

Cozolino (2006) provided an excellent synopsis of the polyvagal theory and said that the unmyelinated vagus, which is pivotal in the freeze adaptation, "controls bodily shutdown and immobilization and depends on the parasympathetic process" (p. 88). Regarding the unmyelinated vagus, Tatkin (2011) wrote that

> scientists sometimes refer to it as the dumb vagus because it isn't discerning or subtle in its response to threat. If we get cut, stabbed, or otherwise physically wounded, the dumb vagus protects us by lowering our heart rate and blood pressure and signaling the hypothalamus to dump pain relievers (beta endorphins, our natural opiates) into our bloodstream. (pp. 31-32)

Tatkin also noted,

> In addition to physical injury, the dumb vagus can be triggered by emotional injury and threat. It likewise responds by shutting down. Blood leaves our face,

> our muscles lose their tone, our ears ring, our stomach hurts. We slump, drop, collapse, and sometimes even faint. (p. 32)

In contrast, Hughes and Baylin (2012) said of the myelinated vagus, the system that allows for balanced relaxation, interpersonal closeness, and intimacy: "The smart vagal system enables us to adjust our level of arousal flexibility to support emotion regulation by adjusting our heart rate, our breathing, facial expressions, voice quality, and pattern of brain arousal" (p. 146).

Cozolino (2006) wrote that "the 'tone' of the vagus refers to the vagal system's ability to regulate the heart and other target organs (Porges et al., 1996)" (p. 91). Consequently, an increased vagal tone in coaches and athletes may have the potential to enhance attachment, co-regulation, self-regulation, and performance. Vagal tone is correlated with an increase in the strength, resilience, and integration of the myelinated vagus. Mindfulness and meditation training can support such an increase in vagal tone (Hughes & Baylin, 2012; Siegel, 2010a; Tatkin, 2011; Wallin, 2007). The use of mindfulness and meditation training as an intervention to strengthen vagal tone in coaches and athletes is examined in Chapter III.

Mirroring and Resonance

Mirror neurons. Whether focusing on the vagal system, the anterior cingulate, or the insula, as Siegel (2010a) noted, "we have evolved a great deal of neural circuitry devoted to tuning in to the internal state of another person" (p. 35). Describing a particular set of neurons known as mirror neurons, he wrote,

> When we perceive an action that has intention behind it—one that has a predictable sequence of behavioral motions—a set of neurons in our cortex responds by getting us ready to act in a similar fashion. These mirror neurons are called this because they function as a bridge between sensory input and motor output that allows us to mirror the behavior we see someone else enact. (p. 36)

"Mirror neurons are the antennae that pick up information about the intentions and feelings of others, and they create in us both emotional resonance and behavioral imitation" (Siegel, 2010b, p. 224).

Hughes and Baylin (2012) explained that

> mirror cells are motor neurons that are activated either by our own intentional movements or by watching each other do things. This includes watching each other make facial expressions and gestures as we interact. Our voices can also activate mirror cells.
>
> Mirroring leads to subtle activation of the same muscles that we use when we are engaging in the type of action that we are observing. . . . When we mirror each other, we also tend to feel, at least subtly, some of what the other person is experiencing. (p. 40)

Relevant to coaching and sport, Cozolino (2010) described that "mirror neurons begin to link observations and actions, allowing us to (a) learn from others by watching them, (b) anticipate and predict actions, and (c) activate emotional states supportive of emotional resonance and empathy" (p. 314). "Mirror neurons lie at the crossroads of processing inner and outer experience where multiple networks of visual, motor, and emotional processing converge (Iacoboni, et al., 2001)" (Cozolino, 2006, p. 187).

Resonance behaviors. Cozolino (2010) made a connection between mirror neurons and resonance behaviors. He wrote that mirror neurons connect people by "linking visual and motor experience" (p. 232). Resonance connects peoples' emotional and internally felt states. Cozolino explained, "It is hypothesized that mirror systems and resonance behaviors provide us with a visceral-emotional experience of what the other is experiencing, allowing us to know others from the inside out" (p. 232). With respect to mirroring, resonance, and emotions, Siegel (2010b) noted,

> We can mirror not only the behavioral intentions of others, but also their emotional states. In other words, this is the way we not only imitate others'

> behaviors but actually come to resonate with their feelings. . . . We sense not only what action is coming next, but also the emotional energy that underlies the behavior. (p. 61)

Ekman (2003) wrote, "All of us can feel the emotions that others feel, feeling emotions empathetically. This is the sixth way emotions can begin—by witnessing someone else's emotional reaction" (p. 34). Ekman "described nine paths for accessing or turning on our emotions" (p. 37). All nine are relevant to the coach–athlete relationship and to sport; however, four are particularly salient to the questions of attachment, attunement, and performance in sport.

Eckman (2003) indicated that emotions occur most commonly through a process called automatic appraisal (p. 21), when one senses that something important to one's welfare is happening or about to happen. "Imagination is still another way in which we can bring about an emotional reaction" (pp. 33-34). Ekman also noted that "simply making an expression would produce changes in people's autonomic nervous systems" (p. 36). Referencing his own research, Ekman claimed, "Making a smile produced many of the changes in the brain that occur with enjoyment. It wasn't just any kind of smile; only the smile that I had earlier found truly signified enjoyment" (p. 36). All of these routes to experiencing emotion may be pertinent to the study of performance in sport and the coach–athlete relationship. Interventions for the coach–athlete relationship based on Ekman's findings are explored in Chapter III.

Parallel to Ekman's (2003) assertion that witnessing someone else's emotional reaction activates emotion within oneself (p. 34), Siegel and Hartzell (2003) wrote that "mirror neurons may also link the perception of emotional expressions to the creation of those states inside the observer. In this way, when we perceive another's emotions,

automatically, unconsciously, that state is created inside us" (p. 65). Wallin (2007) asserted that "having been equipped by evolution with mirror neurons, we're all hard-wired to participate in the subjective experience of other people" (p. 266). These findings are integral to Attachment Based Coaching. Cozolino (2006) wrote,

> Observing the actions, gestures, and facial expressions of others will result in the reflexive activation of motor systems. These motor systems will, in turn, activate thoughts and emotions associated with these behaviors. . . . In these and countless other ways, mirror neurons may bridge the gap between sender and receiver, enhancing emotional resonance, empathic attunement, and mutual understanding (Wolf et al., 2000). Although mirror systems are only one small component of the social brain, they are, in and of themselves, an evolutionary masterpiece. (pp. 190-191)

Connecting emotion, attunement, and attachment to the felt experience of the body, Wallin (2007) wrote about internal awareness and co-regulation. Regarding "heart rate, respiration, muscular tension, [and] visceral sensation" (p. 292), he claimed,

> The importance of including a focus on the body within an attachment-oriented framework should be clear: Emotions are an experience of the body (Siegel, 1999; Damasio, 1994, 1999), and attachment relationships are the context within which we learn to regulate emotions (Fonagy et al., 2002; Schore, 2003). It is this interactive psychobiological regulation that gradually enables us to "translate" bodily sensations into feelings that can be recognized, named, contained, and interpreted (Krystal, 1988). (pp. 292-293)

Wallin's point underscores the somatic dimensions of emotion, empathy, and attachment. Chapter III proposes that the connections between these realms may be strengthened through sport.

Nonverbal Communication

As detailed in Chapter III, the nonverbal components of communication as well as the inherent physicality of sport make a focus on somatic communication an essential element of effective coaching and a cornerstone of the Attachment Based Coaching approach. Regarding communication and the body, Siegel (1999) explained,

> Nonverbal expressions, including those of the face, tone of voice, and gestures, can transfer information about internal states more fully to the outside world than words can do. Words only go so far. . . . Seeing what a person does, rather than asking her how she feels can often be a more direct road into the person's emotional state. (p. 150)

In the October 3, 2008 *Outside* online magazine article, "They Shoot Triathletes, Don't They," endurance sport journalist T. J. Murphy (2008) profiled the acclaimed and controversial triathlon coach, Brett Sutton. Murphy wrote,

> Sutton is a 49-year-old Australian who's been building top triathletes for almost 20 years, among them [Chrissie] Wellington, Loretta Harrop, Greg Bennett, and several others. In disciplines both long and short, his pupils have won some 15 world championships and two Olympic medals. He's widely considered the best, and most unorthodox, coach in the sport. . . .
>
> He draws on the performance fundamentals he learned during his early days as a swim coach and as a trainer of racehorses and greyhounds. He's famous for being a hard-ass. The running joke is that his secret formula is to treat people like animals. (paras. 4-5)

"Greg Bennett, whom Sutton turned from an average pro to a star in the late nineties" (para. 21), went on to become the International Triathlon Union world ranked number one athlete in 2002 and 2003, and fourth in triathlon at the 2004 Athens Olympic Games (Bennett, n.d.). Murphy (2008) said Bennett "told me of the Sutton eye" (para. 21).

> "He has learned how to read animals that are fatigued," he said, "so when he's taking on people, isn't that just another animal?" Bennett added that this skill helps Sutton push his athletes to the brink but not over it. (para. 22)

Chapter III proposes that a coach's attunement to and resonance with an athlete's internally felt states may deepen the level of connection between the coach and athlete. Chapter III also contends that such attunement may enable the coach to help an athlete to become aware of and to regulate internally felt states.

Siegel (1999) wrote, "Nonverbal behavior is a primary mode in which emotion is communicated. Facial expression, eye gaze, tone of voice, bodily motion, and the timing

of response are each fundamental to emotional messages" (p. 121). Cozolino (2006) added,

> Human beings use complex visual information to bridge the social synapse. We watch each other's faces, bodies, and behaviors, constantly monitoring them for information about safety and danger, acceptance and rejection, love and fear. . . . The faces of others may be the single most important source of information in our world (Brothers, 1992). (p. 154)

Cozolino suggested that such physical communication has provided an evolutionary advantage.

> Structural changes to the human eye, pupil dilation, and blushing greatly enhance our ability to communicate with one another. It appears that social communication has been chosen by natural selection to be of greater survival value than disguising our intentions and feelings. (p. 24)

It seems that these adaptations may have been beneficial in the earliest days of human evolution. Chapter III suggests that these adaptations are still an asset to the coach–athlete relationship and to an attachment-based approach to coaching. Siegel and Hartzell (2003) explained that

> primary emotions are directly observed in nonverbal expressions. Facial expressions, eye contact, tone of voice, gestures, posture, and the timing and intensity of response reveal the surges of arousal and activation . . . that are the essence of how a person is feeling. . . . Connecting to primary emotional states is how we tune in to each other's feelings. These primary emotions exist all of the time. (p. 60)

Wallin (2007) wrote of the importance of attending to nonverbal communication in the therapeutic relationship:

> The spell of spoken language can be so hypnotic. We risk allowing the words we exchange in therapy to monopolize our attention when we don't remind ourselves that beneath the words there is a flow of critically important experience that provides the underlying context for the words. Fundamentally emotional and relational, this initially unarticulated experience is often where we find the greatest leverage for therapeutic change. (p. 115)

Chapter III posits that the same argument can be made for the coach–athlete relationship. With respect to nonverbal communication, the parallels between psychotherapy and sport are pronounced. Wallin (2007) argued,

> We cannot exclude the body if psychotherapy is to make room for as much of the patient's experience as possible. The "talking cure" is likely to be significantly less inclusive, less integrative if it is only a conversation between talking heads. . . . To a considerable extent what we feel physically is what we feel emotionally.
>
> Preverbal experience, identified by attachment research as so influential, is largely . . . bodily experience. . . . It is body-to-body communication that provides the evocative subtext of the spoken dialogue in psychotherapy. Although much of the impact of this communication registers outside the conscious awareness, it is also true that it can be very hard to find what we fail to look for. Clinicians cannot afford to ignore the body—neither their patient's nor their own—because the body often receives and transmits what has not or cannot be put into words. (p. 130)

Chapter III suggests that such attention to the body and to the athlete's nonverbal communication may open new dimensions of understanding and development within the coach–athlete relationship.

Attunement

Karen (1994) said that secure attachment is "built on sensitive responsiveness" (p. 177). He also wrote that "well-synchronized mother-infant interactions predict secure attachment" (p. 350). Wallin (2007) made a connection between the importance of attunement and nonverbal communication in early attachment and drew a parallel to the importance of attunement and nonverbal communication with attachment figures later in life. He wrote,

> The "sensitive responsiveness" that helps to foster security in first relationships depends largely on the attachment figure's ability to accurately read the infant's nonverbal signals and to nonverbally communicate responses that are contingent—that is, attuned, matched, or fitted to the signals of the infant. Similarly, our empathic attunement to the patient depends largely on our ability to accurately read the patient's nonverbal cues and to respond nonverbally (as well

> as verbally) in ways that allow patients to sense that their own internal states are not only understood but also somehow *felt* by the therapist. (p. 262)

Newton (2008) asserted that "secure attachment is directly related to attunement" (p. 51). Siegel (1999) explained that there is a link between attunement and regulation:

> The developing mind uses the states of an attachment figure in order to help organize the functioning of its own states. The momentary alignment of states is dependent upon parental sensitivity to the child's signals and allows the mind of the child both to regulate itself in the moment and to develop regulatory capacities that can be utilized in the future. (p. 70)

Hughes and Baylin (2012) articulated how attunement and co-regulation help to stimulate robust neurologic development and secure attachment.

> Each moment of . . . attuned affect facilitates the brain's development and promotes attachment and bonding. . . . It's in these moments of attunement that both parent and child are most likely to release oxytocin and to feel "in sync" with one another (Feldman, Gordon, Schneiderman, et al., 2010) while also producing growth-enhancing brain chemicals. Attunement builds the relationship by enhancing the function of each partner's brain. (p. 148)

Importantly, they also said that "with attunement, parents are also able to co-regulate children's emotions and their expression, enabling young children to develop the psychological ability to 'self-regulate'" (p. 148).

Siegel and Hartzell (2003) maintained that "attuning to each other's internal states links us in a state of emotional resonance that enables each person to 'feel felt' by the other. In this resonating connection, two people mutually influence the internal state of the other" (pp. 60-61). Such connection is integral to the parent-child, therapist-client, and, as discussed in Chapter III, the coach–athlete bond (Hughes & Baylin, 2012; Karen, 1994; Newton, 2008; Siegel, 1999; Siegel & Hartzell, 2003; Wallin, 2007).

Contingent Communication

Highlighting the importance of engaged communication in which the signals of each partner are received, understood, and appropriately responded to, Siegel (1999) explained,

> Attachment at its core is based on parental sensitivity and responsivity to the child's signals, which allow for collaborative parent-child communication. Contingent communication gives rise to secure attachment and is characterized by a collaborative give-and-take of signals between the members of the pair. Contingent communication relies on the alignment of internal experiences, or states of mind, between child and caregiver. This mutual sharing . . . is the essence of healthy, secure attachment. Suboptimal attachments arise with repeated patterns of noncontingent communication. (p. 117)

Such noncontingent forms of communication can be seen in distant and dismissive parental care that often contributes to avoidant attachment and the intrusive and inconsistently attuned parental care that often leads to anxious attachment (Siegel, 2010b; Wallin, 2007). In contrast,

> Secure attachments are thought to occur when children have consistent, emotionally attuned, contingent communication with their parent or other primary caregiver. Relationships that provide contingency, especially at times of emotional need, offer children repeated experiences of feeling connected, understood, and protected. (Siegel & Hartzell, 2003, p. 103)

Siegel and Hartzell (2003) noted that "a contingent response is when the quality, intensity, and timing of the other's signals clearly reflect the signals that we have sent. . . . These kinds of connections create a strong, internal coherence of the self" (p. 83).

> When contingent communication is present in our interactions, our sense of self with that person feels right. It feels good. We feel understood. We have a sense that we are not alone in the world, because our self is connected to something larger than the boundaries of our own skin. (p. 83)

Siegel and Hartzell explained, "In order to thrive, a child (and perhaps each of us at any age) needs contingent communication with significant others" (p. 84).

Wallin (2007) drew a distinction between the quality and intensity of contingent communication present in secure and insecure relationships of attachment.

> Security at one year was predicted when tracking between mother and infant was in the midrange. . . . High levels of coordination seemed to reflect excessively vigilant monitoring of the partner, while low levels appeared to indicate withdrawal, inhibition, or simply a lack of fit between the partners. Optimally, in other words, the contingent responsiveness in the communication of infants and parents is close but not perfect. This has implications for psychotherapy as well as parenting. (p. 109)

The value of tracking and contingent communication that is attuned and accurate but not excessive may have application to the coach–athlete relationship as well. "The conclusion that midrange tracking is developmentally optimal is consistent with Ainsworth's understanding that secure attachment is reflected in a balance of proximity seeking and exploration, connection and autonomy, relatedness and self-definition" (p. 110).

Siegel (1999) made an assertion regarding the need for contingent communication beyond childhood that may be applied to the coach–athlete relationship.

> As adults, we need not only to be understood and cared about, but to have another individual simultaneously experience a state of mind similar to our own. With this shared, collaborative experience, life can be filled with an integrating sense of connection and meaning. (p. 22)

Wallin (2007) maintained that contingent communication is as important to the development of secure attachment in psychotherapy as it is in the parent-child relationship.

> Communication that is collaborative, contingent, and affectively attuned is the heart of the prescription to parents who would provide for their children the experience of a secure base. Needless to say, the effort to facilitate this quality of communication is no less vital in psychotherapy than in parenting. (p. 106)

Chapter III proposes that the same may hold true in the coach–athlete relationship.

Co-Regulation

Building on the principles of attunement, resonance, and contingent communication, Levine and Heller (2010) wrote about the phenomenon of co-regulation:

> Numerous studies show that once we become attached to someone, the two of us form one physiological unit. Our partner regulates our blood pressure, our heart rate, our breathing, and the levels of hormones in our blood. We are no longer separate entities. (p. 26)

Wallin (2007) explained, "Our patients need to experience us as capable of helping them to cope with their difficult feelings. . . . Paraphrasing Schore (2003), attachment *is* the interactive regulation of emotion" (p. 196).

Johnson (2004) described the sense of the safety and security that is felt when an attachment figure is available to help with the regulation of affect. She wrote,

> The presence of an attachment figure . . . provides comfort and security, while the perceived inaccessibility of such figures creates distress. Proximity to a loved one tranquilizes the nervous system (Schore, 1994). It is the natural antidote to the inevitable anxieties and vulnerabilities of life. For people of all ages, positive attachments create a safe haven that offers a buffer against the effects of stress and uncertainty (Mikulincer, Florian & Weller, 193) and an optimal context for the continuing development of the personality. (pp. 25-26)

Wallin (2007) wrote, "Attachment relationships are the primary context within which we learn to regulate our affects—that is, to access, modulate, and use our emotions" (p. 64).

Regarding co-regulation in relationships of attachment, Siegel (1999) explained,

> At the emotional core of attachment relationships are the amplification of shared positive states and the reduction of negative affective states. As these dyadic states are experienced, the child comes to tolerate wider bands of emotional intensity and shared affective communication. (p. 274)

"Amplifying (up-regulating) and/or down-regulating your child's feeling states leads to emotional regulation, which is highly associated with secure attachment" (Newton, 2008, p. 51). Hughes and Baylin (2012) maintained that

> children need assistance in regulating positive emotions just as they need help in regulating negative ones. When children are excited and parents are not present to experience it with them, the excitement might become more intense, be hard to regulate, and turn into anxiety. (p. 152)

Although Hughes and Baylin, Newton (2008), and Siegel (1999) wrote about parenting, the research indicates that such co-regulation is a key feature of attachment relationships outside the family of origin as well (Cozolino, 2010; Johnson, 2004; Levine & Heller, 2010; Siegel, 2010a; Wallin, 2007). Chapter III proposes that similar co-regulating dynamics occur between coach and athlete in the management of arousal in training and competition.

Windows of tolerance. With respect to arousal and emotional activation, Siegel (1999) wrote,

> In states of mind beyond the window of tolerance, the prefrontally mediated capacity for response flexibility is temporarily shut down. The "higher mode" of integrative processing has been replaced by a "lower mode" of reflexive responding. The integrative function of emotion . . . is suspended. (pp. 254-255)

Johnson (2004) explained the therapist's role as an attachment figure in the tolerance and co-regulation of internal states that might otherwise feel unbearable: "The therapist's comfort and reassurance help the individual stay engaged with, but not be overwhelmed by, affective experience. The therapist's ability to accurately reflect, accept, and crystallize such experience also helps the person regulate and organize the experience" (p. 212). Chapter III suggests that coaches may engage in a similar process to help athletes expand their windows of tolerance for the extreme physical and emotional states associated with training and racing.

Mild to moderate stress. With respect to expanding windows of tolerance, those who trust in the co-regulating support of an attachment figure benefit from mild to

moderate stress that pushes, but does not exceed, their current windows of tolerance. Cozolino (2010) noted,

> The power of mild to moderate levels of stress to trigger neural plasticity is a key element in the success of psychotherapy or any learning situation. . . . Controlled exposure to stress during therapy enhances new learning and increases neural integration. . . . Repeated exposure to stress in the supportive interpersonal context of psychotherapy results in the ability to tolerate increasing levels of arousal. (p. 21)

Siegel (2010a) wrote, "When we can enter dyadic states of attunement, we widen the window of tolerance and enable our clients to move into emergent states of trust and safety with their own internal states" (p. 242). Chapter III proposes that similar processes are at work in the training of athletes. Attachment Based Coaching applies this understanding to increase athletes' windows of tolerance and to build trust in the security of the coach–athlete relationship.

Awareness and Self-Regulation

Siegel (1999) explained that it is through positive experiences of co-regulation that individuals develop the capacity for self-regulation. "Self-regulation is fundamentally related to the modulation of emotion. . . . Emotion regulation is initially developed from within interpersonal experiences in a process that establishes self-organizational abilities" (p. 8). Cozolino (2006) wrote that "when caretaking includes emotional attunement, self-reflection, and sharing about states of mind, our children learn to be better aware of themselves and include this awareness in their narratives about themselves and the world" (p. 338). Johnson (2004) applied the same principles to the therapeutic relationship and process:

> The therapist's role is to help each client expand his or her awareness of that experience in the present moment in the session, integrate aspects that were

> excluded from awareness, and create new meaning frameworks. The focus of therapy is then on present process. (p. 42)

Siegel (2010b) explained that mindfulness involves a present-centered awareness and drew a link between the shared neurology of mindfulness, attunement, and secure attachment. He explained,

> Mindfulness is a form of mental activity that trains the mind to become aware. . . . Mindfulness requires paying attention to the present moment from a stance that is nonjudgmental and nonreactive. It teaches self-observation. . . . Just as our attunement to our children promotes a healthy, secure attachment, tuning in to the self also promotes a foundation for resilience and flexibility. (p. 86)

Siegel indicated that mindfulness, like secure attachment, strengthens the middle prefrontal regions of the brain. Regarding the middle prefrontal region, he wrote,

> These neural circuits . . . enable us to resonate with others and to regulate ourselves. It is here that we can see the connection between attunement and regulation: internal and interpersonal forms of attunement each lead to the growth of the regulatory circuits of the brain. When we have attunement—either interpersonally or internally—we become more balanced and regulated. (p. 86)

Siegel (2010a) noted that "*neuroplasticity*—the process of change in the structural connections in the brain in response to experience—is promoted with such focused awareness" (p. xxiv). Chapter III proposes that the use of focused awareness in sport may strengthen neural structures and their connections in ways that promote integration, support attachment security, and enhance athletic performance.

Myelination

Siegel (2010b) wrote that "experience also stimulates the production of myelin, the fatty sheath around axons, resulting in as much as a hundred-fold increase in the speed of conduction down the neuron's length" (p. 42).

> Myelin can increase conduction speed by 100 times. And while all neurons need to rest after firing, myelin can reduce that resting time—called a refractory period—by 30 times. The end result, you can imagine, is that if you and I are

> neurons in a circuit and we've been training well, our communication with each other will be 3,000 times faster than an unmyelinated pair of connected neurons. Three thousand times more efficiency in the brain means that our functional connectivity will outshine other neuronal communication. (Siegel, 2010a, pp. 218-219)

Chapter III argues that this is a critical distinction for sport. Training with focused attention and awareness, executing drills with clarity of purpose, training with best technique, self-talk, energy management, and arousal modulation are all skills with neural pathways that can be myelinated. It would seem that the importance of myelination in sport cannot be overstated. Siegel (2010a) wrote,

> The number of hours of practice is proportional to the amount of myelin wrapping the relevant circuits. Expertise, practice, and myelin go hand in hand in hand. . . . We need to train the mind to myelinate the brain in specific areas. (p. 219)

"Training involves the purposeful harnessing of the power of experience to change the function and the structure of the human brain. . . . The experience we're utilizing is the power of awareness to focus attention" (pp. 217-218). Chapter III proposes that along with the body, training for sport is ultimately a process of training the mind.

Mindfulness

Siegel (2010b) wrote that "the intentional focus of attention . . . stimulates new patterns of neural firing to create new synaptic linkages" (p. 41). Wallin (2007) maintained that

> exercising voluntary, sustained, and nonjudgmental attention to our here-and-now experience changes that experience. . . . It contributes to the regulation of difficult emotions. It also tends to deautomatize habitual patterns of response (Engler, 2003; Maretin, 1997; Safran & Muran, 2000). . . . Finally, mindfulness quiets the mind. Lowering the volume of mental static, it heightens our receptivity to signals from every domain of the self. Experiences of the mindful self are thus not only integrated but also integrating: They foster adaptive connections between different aspects of the self and between the self and others.

> Understood in this way, mindfulness can be seen as a vital therapeutic resource that—like mentalizing—both strengthens and is strengthened by the new attachment relationship we are attempting to generate. (p. 68)

Wallin described *mentalizing* as "a process that allows us to understand and make meaningful sense of our own experience and that of others" (p. 54).

Sport psychology researchers Frank Gardner and Zella Moore (2004) explored the role of mindfulness in sport. They wrote,

> Mindfulness techniques emphasize the development of nonjudging, nonevaluative attention to present realities, including both external stimuli and internal processes. . . . Mindfulness from this perspective can be thought of as an attentional skill. It is developed through regular practice of mindfulness exercises, and with particular relevance to athletic performance, can be viewed as a form of self-regulated present-moment attention (Kabat-Zinn et al., 1992). (p. 712)

Siegel (2010a) explained, "While mindfulness is practiced throughout the world, East and West, ancient and modern, it is a human skill that religions use—not itself a religious practice" (p. 239). Making a link between mindfulness, meditation, co-regulation, and therapy, Wallin (2007) wrote, "Psychotherapy can be seen as a kind of meditation for two in which our task is to help the patient to be able to be mindful of her moment-to-moment experience" (p. 162). Such attunement, shared attention, and co-regulation are also key features of an attachment-based approach to coaching.

Professor of sport psychology Mark Andersen (2012) observed that

> mindfulness did not appear in the academic sport psychology discourse in any substantial way until the 2000s. It is surprising that mindfulness has made such a late entry into the academic applied sport psychology literature, given that most authors following PST [psychological skills training] approaches acknowledge that staying in the present time is an important part of performance. (p. 728)

Gardner and Moore (2004) drew a contrast between the more traditional psychological skills training interventions of sport psychology and a less conventional mindfulness-based approach. Chapter III, however, makes the assertion that psychological skills

training and mindfulness-based interventions are mutually reinforcing and that they are both supportive of an attachment-based approach to the coach–athlete relationship.

Rupture and Repair

Another factor essential to attachment security within a relationship is authenticity during times of conflict (Wallin, 2007). Being sensitive, honest, and direct about discord when it surfaces in the relationship is linked to the attachment-enhancing practices of attunement, contingent communication, and co-regulation. Wallin wrote that it is crucial for therapists, as attachment figures, to initiate genuine and responsible communication

> when the therapeutic relationship has come to feel uncomfortable, mechanical, adversarial, or disconnected. Then, to the degree that the implicit can be made explicit, [therapists] usually enhance the likelihood that the patient's relationship with the therapist may ultimately be experienced as safe, attuned, collaborative, and inclusive. What is key here—just as it is in our first attachment relationships (Koback, 1999)—is that the lines of communication between the two partners be kept open. (p. 267)

Jowett (2003) wrote that elite coaches and athletes often experienced conflict over "issues such as training, perceived power, technical information, and team climate" (p. 445). Jowett noted that "coaches and athletes in 'negative relationships' . . . experienced hurt feelings, lack of communication, commitment, and satisfaction" (p. 446). She contended that "the study of interpersonal conflict in the coach–athlete relationship is important because it can impact relationship members' level of stress, confidence, motivation, self-esteem, and performance accomplishments" (p. 446).

Wallin (2007) explained that occasional conflict is a normal feature of attachment relationships. He explained the therapeutic value of working to resolve such difficulties.

> What is more important than avoiding the disruptions that are an inevitable feature of relationships is tolerating and repairing them. In fact, such sequences of disruption and repair, misattunement and reattunement, are vital interactions whose internalization specifically encourages confidence that misunderstandings

> can be resolved—and, more broadly, that distress can be weathered, because it can be relieved. (p. 107)

Such experiences may be a vital part of a healthy coach–athlete relationship. A parallel may be seen in Siegel and Hartzell's (2003) comments on the parent-child relationship.

> Repair is an interactive experience that usually begins with the parent's own centering process. . . . Only from that mindful, centered place can the parent begin the important and necessary process of reconnection. . . . Some parents may want to "just get over" their moods and the unpleasant interactions and move on to act as if the rupture had never occurred; this leaves the child feeling an even greater disconnection from his own feelings. (pp. 197-198)

They explained that "with ruptured communication, contingency is halted. At its most basic level, movement toward repair requires that contingency be reestablished. With reconnection, two internal states are realigned and the self of each person reaches a renewed sense of coherence" (p. 97).

Repaired contingency and connection is essential to the experience of secure attachment. Siegel and Hartzell (2003) explained,

> Our minds are fundamentally linked to others' through the sending and receiving of signals. Ruptured connection, especially of our nonverbal signals, separates our primary emotions from the other person and we are cast adrift. . . . We no longer feel felt, but instead feel misunderstood and alone. When this linkage with an important person in our lives is broken, our minds will quite likely experience a disruption in balanced and coherent functioning. We are not meant to live in isolation, but are dependent on one another for emotional well-being. (p. 186)

The following excerpt from Hughes and Baylin (2012), about the parent-child relationship, is equally fitting when applied to the coach–athlete relationship.

> In a deeply accepting relationship, when the inevitable parent-child tensions arise, the relationship bends rather than breaks. Although there is inevitable misattunement (Tronick, 2007), the misattunement does not trigger intense fears of abandonment and rejection in a healthy parent-child relationship. Indeed, the relationship draws strength from both parties experiencing the natural cycle of attunement, misattunement, and repair (Siegel, 2005). (p. 112)

Safety, Threat, and Trust

Relationships of secure attachment provide a safe haven during times of emotional need. Sensitivity and the initiation of repair on the part of the attachment figure help to provide such security. Regarding the provision of a safe haven in the service of therapeutic change, Cozolino (2010) explained, "Because the process of attachment is, at heart, a way in which social animals initially regulate fear, and later their affective lives, modifying insecure attachment, first and foremost, requires the establishment of a safe and secure relationship" (p. 211). Cozolino (2006) also wrote, "The most important aspect of early attachment relationship is the establishment of a sense of safety. In the same way, establishing and maintaining trust is the first and most important order of business in a therapeutic or teacher-student relationship" (p. 322).

The establishment and maintenance of trust in the coach–athlete relationship is just as pivotal. Chrissie Wellington, four-time Ironman World Champion and one of Brett Sutton's prodigies, was quoted in Murphy's (2008) article discussing the infamously difficult Black Wednesday training sessions: '"What fascinates me about Brett is this emphasis on the mental side,' Wellington says. The value of a Black Wednesday, she says, is psychological toughening. For this to work, the athlete has to trust Sutton completely" (para. 29).

Siegel (2010a) said, "Presence, attunement, and resonance are the way we clinically create the essential condition of trust" (p. 75). When the therapist, or the coach, or the parent is consistently present and attuned in such a way that is sensitive, accurate, and helpful, the client, athlete, or child can begin to trust in the attachment figure's reliability as a safe haven and a secure base (Cozolino, 2006, 2010; Hughes & Baylin,

2012; Karen, 1994; Siegel, 1999, 2010a; Siegel & Hartzell, 2003; Wallin, 2007). For the athlete, as with all people, "presence depends upon a sense of safety. The brain continually monitors the external and internal environment for signs of danger. . . . When danger is assessed, we go on high alert and activate the fight–flight–freeze response" (Siegel, 2010a, p. 21).

Receptivity and reactivity. With regard to presence and safety, Siegel (2010a) drew from attachment theory and polyvagal theory to make a connection between the neurologically based impediments to connecting with others when sensing threat and a similar difficulty in being present to oneself when under threat or duress. He wrote,

> With the sense of danger, we cannot activate what Porges calls the *social engagement system*. And we don't access what I've called a *self-engagement system* either (see Siegel, 2007a). Instead of being present with mindfulness, we become removed, alone, and paralyzed. This is how we move from being receptive to being reactive. (p. 23)

"When we see things as threatening, we have left the open state of receptive presence and entered the reactive state of fight–flight-or-freeze" (p. 22). Siegel described the two areas that people tend to fixate on when in the reactive state. He wrote, "Fight or flight narrows our focus of attention on strategies of attack or routes of escape" (p. 22).

Siegel (2010b) used the term *reactive* to describe a state in which one's "behavior is determined in large part by prior learning and is often survival-based and automatic" (p. 199). He explained that "when the nervous system is reactive, it is actually in a fight–flight–freeze response state, from which it is just not possible to connect with another person" (p. 214). Chapter III applies these concepts to training and racing and proposes that if the athlete or the coach become reactive rather than receptive, then response

flexibility, presence, attunement, and resonance may be compromised along with athletic performance and development (Porges, 2011; Siegel, 2010a, 2010b).

Sport psychology researchers Susan Jackson, Patrick Thomas, Herbert Marsh, and Christopher Smethurst (2001) explained in "Relationships Between Flow, Self-Concept, Psychological Skills, and Performance" that

> flow is an optimal psychological state that occurs when there is a balance between perceived challenges and skills in an activity (Csikszentmihalyi, 1990). It is a state of concentration so focused that it amounts to absolute absorption in an activity. (p. 130)

Based on this interpretation of performance and flow, if an athlete is excessively vigilant for threat, perceives threat, or is in a reactive state, then the athlete will not be able to be absorbed in focus on performance. Rather, the athlete who is vigilant for threat or in a reactive state will likely be focused "on strategies of attack or routes of escape" (Siegel, 2010a, p. 22).

Widening windows of tolerance. Siegel (2010a) noted that "no helpful communication can generally emerge from a reactive state" (p. 26). He wrote that "each of us has a 'window of tolerance' in which various intensities of emotional arousal can be processed without disrupting the functioning of the system" (Siegel, 1999, p. 253). He also explained that "within our window of tolerance we remain receptive; outside of it we become reactive" (Siegel, 2010b, p. 137). Importantly, Siegel (2010b) added that "the presence of a caring, trusted other person, one who is attuned to our internal world, is often the initial key to widening our windows of tolerance" (p. 138). Siegel (1999) also wrote,

> One's thinking or behavior can become disrupted if arousal moves beyond the boundaries of the window of tolerance. For some persons, this window may be quite narrow. . . . The width of the window of tolerance within a given individual

> may vary, depending upon the state of mind at a given time. . . . We may be more able to tolerate stressful situations when surrounded by loved ones with whom we feel secure and understood. (p. 254)

Wallin (2007) explained, "To feel understood in depth . . . translates into a feeling of being accepted. Feeling understood and accepted fosters confidence that their experiences . . . can be safely contained in the new attachment relationship" (p. 196). Having confidence that one's feelings and experiences can be understood, tolerated, and appropriately responded to may help to build trust in an attachment figure and a sense of security in the relationship. The literature on attachment and neuroscience indicates that such trust is an essential precursor to the co-regulation that may help to widen windows of tolerance (Cozolino, 2006, 2010; Hughes & Baylin, 2012; Siegel, 1999, 2010a, 2010b; Siegel & Hartzell, 2003; Wallin, 2007).

Feeling Seen, Felt, and Understood

The attunement and resonance of an attachment figure can help to generate feelings of safety, security, and trust. As Siegel (2010a) wrote,

> With resonance we come to "feel felt" by the other. This joining has profound transformative effects on both people. Resonance is what our human nervous system is built to require for a sense of connection to others early in life. This experience of connection brings with it a feeling of security, of being seen, and of feeling safe. The need for such intimate and vulnerable connection persists throughout our lives. (p. xx)

Siegel (1999) noted that "'feeling felt' may be an essential ingredient in attachment relationships. Having the sense that someone else feels one's feelings and is able to respond contingently to one's communication may be vital to close relationships of all sorts" (pp. 272-273). Siegel and Hartzell (2003) wrote that "relationships that provide contingency, especially at times of emotional need, offer children repeated experiences of

feeling connected, understood, and protected (p. 103). Crucial to attachment relationships and particularly salient to the coach–athlete relationship, Siegel (2010b) explained that

> neural networks around the heart and throughout the body are intimately interwoven with the resonance circuits in the brain—so that when we "feel felt" by another it also helps us to develop the internal strength of self-regulation, to become focused, thoughtful, and resourceful. (p. 167)

Wallin (2007) expressed the importance of feeling seen, felt, and understood within a relationship of attachment:

> Whether in the course of childhood development or psychotherapy, it appears that the psychological, emotional, reflective self is discovered (or perhaps created) primarily as it is recognized and understood by others. The optimal setting for such recognition and understanding is, of course, a relationship of attachment. (p. 51)

Wallin (2007) also linked the notion of intersubjectivity with attachment. He wrote, "The intersubjective system is driven by our need to know and be known by others. If attachment exists to foster felt security, intersubjectivity exists to promote the experience of psychic intimacy and belonging" (p. 54). From a neurologic standpoint, Siegel (1999) noted, "The experience of expressing one's emotional state and having others perceive and respond to those signals appears to be of vital importance in the development of the brain" (p. 129). Such development has to do with resilience and integration (Siegel, 1999, 2010b; Siegel & Hartzell, 2003; Wallin, 2007).

Mental Toughness

Sport psychology professors Robert Harmison and Kathleen Casto (2012) wrote about the personal and behavioral characteristics that are associated with high performance in sport.

> Certain psychological characteristics appear to be correlated with optimal performance for most athletes, consisting of feelings of high self-confidence and expectations of success, being energized yet relaxed, feeling in control, being

> totally concentrated, having a keen focus on the present task, having positive attitudes and thoughts about performance, and being strongly determined and committed. Conversely, the characteristics typically associated with poorer performances in sport seem to include feelings of self-doubt, lacking concentration, being distracted, being overly focused on the competition outcome or score, and feeling over-or underaroused. (p. 713)

The traits that Harmison and Casto have connected to high performance in sport are also those that have been identified in the attachment literature to be supported by secure attachment. In their article on attachment in sport, Davis and Jowett (2010) stated that "unlike insecurely attached individuals . . . securely attached individuals have a stronger capacity to remain relatively calm under stressful situations and are likely to experience positive affect as a result" (p. 117).

The concept of *mental toughness* is widely circulated but often nebulous in meaning. Professors of sport psychology Graham Jones, Sheldon Hanton, and Declan Connaughton (2002) defined mental toughness in the following terms:

> Mental toughness provided the performer a psychological advantage over opponents. This advantage, either innate or developed over years of experience, enabled the performer to have superior self-regulatory skills. Specifically, mentally tough performers consistently remained more determined, focused, confident, and in control under the pressures and demands that top level sport placed upon them. (pp. 209-210)

Each of the qualities identified above may be developed and supported within a relationship of secure attachment. In a hostile coach–athlete relationship, or in ones in which insecure models of attachment are reinforced or recapitulated, such characteristics of self-regulation, focus, confidence, and control under pressure are likely to be eroded (Cozolino, 2006, 2010; Hughes & Baylin, 2012; Porges, 2011; Siegel, 1999, 2010a, 2010b; Siegel & Hartzell, 2003; Wallin, 2007).

Mental toughness arises from the sum of the following traits in athletes: powerful and abiding self-confidence, deeply rooted internal motivation, the ability to maintain and sustain external and internal focus, and the capacity to perform with composure while under pressure (Jones et al., 2002). Given the attention in the attachment literature to self-awareness, internal regulation, confidence, and resilience, it seems plausible to consider that there may be a positive correlation between attachment security and the development of mental toughness in athletes. Chapter III presents a number of attachment-based approaches to build mental toughness in athletes.

Integration

Secure attachment helps to foster the integration of neural networks throughout the brain; likewise, such neural integration also contributes to the development of secure attachment (Cozolino, 2006). Wallin (2007) wrote that "healthy relationships of attachment . . . are necessary for the development and integration of right- and left-brain functions—and of limbic and cortical functions as well" (p. 78). Wallin also explained that "these varieties of brain integration (right/left, and bottom/up) are the neural corollary of the psychological integration that is not only the reward of secure attachment but also the goal of psychotherapy" (p. 78).

Attention and conscious processing. The attuned presence of an attachment figure can help to facilitate self-awareness, self-regulation, and integration. The co-regulating support of an attachment figure can help to decrease the likelihood that a child, client, or athlete will be overwhelmed by his or her experience (Cozolino, 2006, 2010; Hughes & Baylin, 2012; Siegel & Hartzell, 2003, Wallin, 2007). Cultivating a sense of internal coherence and integration are at the heart of an attachment-oriented therapy.

> When we are overwhelmed by traumatic experiences, our brains lose the ability to maintain neural integration across the various networks dedicated to behavior, emotion, sensation, and conscious awareness. . . . In the process of psychotherapy, we attempt to reintegrate these dissociated networks. (Cozolino, 2006, p. 32)

Similarly, when the coach is attuned and engaged with an athlete in training, cuing the athlete's awareness and performing a co-regulating function, then the athlete is less likely to be overwhelmed by, or to dissociate from, the physical and emotional sensations generated in the process of training. By consciously attending to the body, breath, and mind in training, the athlete is recruiting hippocampal involvement to encode explicit memory while simultaneously creating robust, myelinated neural pathways (Cozolino, 2006, 2010; Hughes & Baylin, 2012; Siegel, 1999, 2010a, 2010b; Siegel & Hartzell, 2003; Wallin, 2007). Chapter III proposes that such integration may enhance athletic performance and also help both the coach and athlete move toward greater attachment security.

Debriefing. Relationships of attachment promote and enhance the integration of structures within the brain and across the hemispheres of the brain (Cozolino, 2006; Hughes & Baylin, 2012; Siegel, 1999; Siegel & Hartzell, 2003; Wallin, 2007). Siegel (1999) wrote that "left-hemisphere-to-left-hemisphere resonance takes the form of verbal communication within a linear, logical mode of discourse. Right-hemisphere-to-right-hemisphere resonance involves the nonverbal components of communication, such as tone of voice, gestures, and facial expressions" (p. 334). The coach–athlete debrief, in training and after competition, exemplifies this process of left and right cross-modal integration. The coach–athlete debrief is discussed in Chapter III, and is one of a range of exchanges that can build security and trust in the relationship and that may help to foster attachment security in the athlete.

Challenging insecurities. Siegel and Hartzell (2003) explained how insecure attachment can interfere with neural integration. Regarding individuals with avoidant attachment histories, they wrote,

> Their defensive state of mind appears to reduce their motivation to be open to the emotional experiences of others. In addition, there may be a decreased access to and awareness of their own emotions. These avoidant adaptations can be seen as a minimization of right mode processing in favor of a predominance of left-mode thinking in order to reduce their emotional vulnerability. (p. 135)

With such clients, Siegel and Hartzell recommended interventions that help to strengthen bilateral integation:

> Often right-mode processing may be underdeveloped, demonstrated by . . . diminished self-awareness, and at times a decreased ability to perceive the nonverbal signals of others. Self-reflection may be limited because it is primarily the logical and nonautobiographical left mode that becomes engaged. For this reason, efforts to activate the right mode may be helpful and necessary. . . . Activities such as guided imagery which focus on nonverbal signals, increase awareness of sensations in the body, and stimulate the right side of the brain have been quite useful to mobilize underdeveloped right-mode processes. (pp. 135-136)

Chapter III contends that, from an Attachment Based Coaching stance, such opportunities for right mode activation, awareness, and integration abound in sport and within the close, interpersonal contact of the coach–athlete relationship.

Regarding individuals with anxious attachment histories and the interventions that may help to enhance neural integration and attachment security, Wallin (2007) wrote,

> Early experience with unpredictably responsive attachment figures has taught these patients that their best hope for securing the attention and support of others is to make their own distress too conspicuous to ignore. . . . The need to keep the attachment system chronically activated undermines the preoccupied patient's potential not only for emotional balance but also for self-esteem and trust in others.
>
> In psychotherapy, therefore, if we are to help such patients to strengthen their capacities for emotional balance, self-esteem, and trust, we must offer them a relationship that presents an alternative to their hyperactivating strategy. . . . We

> need to provide preoccupied patients with a relationship that renders the hyperactivating strategy increasingly unnecessary. (p. 225)

Wallin said, “Our task is to co-create a relationship with our patients that allows them to make sense of their experience, to feel more ‘together,’ and to relate to others more deeply and with greater satisfaction” (p. 133). As Chapter III explains, the Attachment Based Coaching model is built upon the premise that the same interpersonal challenges and opportunities for integration that Wallin described are present within the coach–athlete relationship.

Chapter III
Attachment Based Coaching

We meet to swim at 6:35 a.m. Before training begins, I have my athletes gather in the hot tub. Ostensibly this is to raise the core temperature, warm the shoulders, and take the edge off of the morning chill as we discuss the upcoming session. It is here, however, that my athletes come together as a team. In these five to ten minutes before we swim, my athletes laugh, relax, and connect. They resonate with each other's feelings of excitement, or anticipation, or shared training fatigue. From here I can read my athletes as they walk across the pool deck. I look at their faces, their postures, and their gaits. I observe the stiffness or animation with which they move. I listen to the tone, cadence, and volume of their voices. I notice if they are lively, anxious, or subdued. I get a sense for how they are feeling, what they can handle, if it's a day to push or to dial back. I goof around with them, build rapport, connect, and strengthen our bond. I reflect to them how they look and what that means for the training.

Being consistently present, interested, and invested in my athletes is a validation of their inherent worth and humanity. By being reliably available to my athletes we build trust. In the language of attachment, we are building security. My athletes come to feel that they can depend on me to be there for them when it counts. They come to feel that I can be a safe haven for them in times of need and a secure base from which they can explore.

Training as a Unique Arena for Interpersonal Growth and Integration

Focused attention and aerobic exercise. Siegel (2010b) noted that "the keys to neuronal growth are novelty, attention, and aerobic exercise" (p. 110). This finding suggests that the coach–athlete relationship may be an arena in which it is possible to address attachment schemas and to stimulate and integrate neural networks associated with self-awareness, self-regulation, and resilience. In *The Compass of Pleasure: How Our Brains Make Fatty Foods, Orgasm, Exercise, Marijuana, Generosity, Vodka, Learning and Gambling Feel So Good*, Johns Hopkins University School of Medicine professor of neuroscience David Linden (2011) wrote,

> Sustained physical exercise, whether it be running or swimming or cycling or some other aerobic activity, has well-known health benefits. . . . Voluntary exercise is also associated with long-term improvements in mental function and is the single best thing one can do to slow the cognitive decline that accompanies normal aging. Exercise has a dramatic antidepressive effect. It blunts the brain's response to physical and emotional stress. A regular exercise program produces a large number of changes in the brain, including the new growth and branching of small blood vessels, and increases in the geometric complexity of some neuronal dendrites. It is associated with a host of interrelated biochemical changes as well, including increases in the level of a key protein called BDNF (brain-derived neurotrophic factor). (p. 150)

Linden also specified that a short-term benefit of exercise is the "reduction of acute anxiety" (p. 151). The effects of reducing depression and anxiety, along with increasing BDNF, are all helpful in promoting attachment security as well as a sense of ease, safety, and relief in the training environment.

Stressors. The nature of high performance sport may push an athlete, internally and externally, into uncharted territory. The pursuit of performance-oriented training and racing abounds with stressors: Physical and emotional intensity, fatigue, illness and injury, and interpersonal and financial concerns are just a handful that athletes must

manage (Moore, 2012). The coach–athlete relationship may provide a safe haven for athletes when they are faced with such stressors and a secure base from which to explore new internal and external territory. Cozolino (2010) stated that

> repeated exposure to stress in the supportive interpersonal context of psychotherapy results in the ability to tolerate increasing levels of arousal. . . . The therapist plays essentially the same role as a parent, providing and modeling the regulatory functions of the social brain. As affect is repeatedly brought into the therapeutic relationship and successfully managed, the client gradually internalizes these skills by sculpting the neural structures necessary for autoregulation. (p. 21)

Whereas Cozolino was referring to the process of psychotherapy, the same types of processes occur in the coach–athlete relationship. From the perspective of attachment, when helping the athlete to tolerate increasing levels of arousal and stress, the coach is performing the functions of a safe haven and a secure base as well as co-regulation. As such, there may be the same types of therapeutic outcomes in the coach–athlete relationship as are seen in secure therapist-client relationships. It is important, however, to make clear that an attachment-based approach to coaching is not a replacement for psychotherapy. Nevertheless, an attachment-based approach to coaching may be a powerful adjunct to therapy.

The literature from the fields of attachment and interpersonal neuroscience suggest that the principles of attachment, attachment security, and neuroplasticity may apply to the coach–athlete relationship. Regardless of an athlete's attachment orientation, the coach may be able to provide athletes with a secure base, a safe haven, and an external source of assessment and regulation. Siegel (1999) wrote that

> although attachment behavior is seen primarily in children, adults continue to manifest attachment throughout the lifespan. Especially under times of stress, an adult will monitor the whereabouts of a few selected "attachment figures" and

> seek them out as sources of comfort, advice, and strength. For adults, such attachment figures may be mentors, close friends, or romantic partners. (p. 68)

The Attachment Based Coaching model proposes that the coach may be added to this list of potential attachment figures and provide such a source of comfort, advice, and strength.

Somatic communication. Because the nature of sport is physical, intense, stressful, and at times intimate, sport and the coach–athlete relationship can be prime environments to develop increased capacities for self-awareness, self-regulation, and resilience. As mentioned in Chapter II, the right brain is significantly involved in the processes of internal awareness and regulation, nonverbal communication, stress management, and empathy (Cozolino, 2006; Newton, 2008; Schore, 2008; Siegel, 1999, 2010b; Siegel & Hartzell, 2003). This suggests that the arenas of sport and the coach–athlete relationship may be ideal environments to build the brain structures associated with self-awareness, self-regulation, resilience, and connection to others. As indicated in the literature on attachment and neuroscience, these functions and their correlated brain structures are all associated with secure attachment (Cozolino, 2006, 2010; Hughes & Baylin, 2012; Johnson, 2004; Newton, 2008; Siegel, 1999, 2010a, 2010b; Siegel & Hartzell, 2003; Wallin, 2007).

> There is a direct resonance between the primary emotional, psychobiological state of the patient and that of the therapist. These nonverbal expressions are mediated by the right hemisphere of one person and then perceived by the right hemisphere of the other. In this way, the essential nonverbal aspect of psychotherapy, and perhaps all emotional relationships, can be conceived as a right-hemisphere-to-right-hemisphere resonance between two individuals. (Siegel, 1999, p. 298)

Such resonance, especially when it is intentionally fostered, operates within the coach–athlete relationship. Harnessing this resonance is the key to Attachment Based Coaching.

Wallin (2007) described the attachment-based process of body-to-body communication by which infants learn about their internal states. This type of somatic communication is also a fundamental dimension of Attachment Based Coaching.

> Facial expressions and tone of voice, posture and gesture, the rhythms and contours of speech and behavior—these are the elements that compose what is essentially a medium of body-to-body communication. Such communication during infancy can be seen as a conversation between the baby's somatic/emotional self and the caregiver's somatic/emotional self—or, from a neuroscience perspective, as a "conversation between limbic systems" (Buck, 1994, quoted by Schore, 2003, p. 49). The subject of this conversation is mainly the infant's internal states—particularly, emotions and intensions. As the conversation unfolds through the bodily expression of internal states, the infant learns about herself and others. (p. 119)

This deep, somatic, nonverbal exchange is grounded in attunement and resonance. Ideally, such resonance in the coach–athlete relationship supports co-regulation. Co-regulation is one mechanism that may help to nurture an athlete's developing capacities for self-awareness and self-regulation. For both the coach and the athlete, such moments of contact can be experiences of profound intimacy, vulnerability, and connection—all of which can help to rework insecure attachment schemas and support the development of secure attachment.

Intimacy. In his interview with Brett Sutton, Murphy (2008) captured the importance of closeness in the coach–athlete relationship:

> Sutton prefers not to work with too many people at once, a rarity in the age of Web coaching. "I know I could have 100 people here and make more money," he says. "But that's not what I'm about. Coaching is sacred to me." (para. 18)

Sutton's assertion reflects a sense that although commercializing his services might be financially profitable, doing so would cheapen something that is precious to him. Murphy wrote, "What stands out . . . is Sutton's ability to see into the depths of an individual. He examines each athlete and issues unique instructions one-on-one, as if he were coming up

with plans on the spot" (para. 20). The value for Sutton in coaching a select few, it would seem, is in having a personal connection with each athlete and in what it means to attend to each relationship personally.

The adolescent psyche. In *The Adolescent Psyche*, psychotherapist Richard Frankel (1998) explained, "One of the inevitable struggles in adolescence is between a regressive pull back to what is known, familiar and safe, and a forward movement out into the world" (p. 6). Siegel (1999) wrote about the attachment-oriented influence of close relationships outside of the family of origin:

> Though early attachment experiences have been shown to have a direct influence on social competence, sense of autonomy, ego resilience, and peer acceptance, it seems clear that dyadic relationships beyond those with early caregivers may continue to influence the development of regulatory capacities. (p. 314)

It is worth considering that the coach–athlete relationship may, for many young people, be one of the first parental-type relationships outside of the family of origin. As such, the coach–athlete relationship may be a place for young people to encounter new attachment experiences and, perhaps, to update internalized models of attachment. For most though, it is likely that the attachment schemas encoded in implicit memory will recapitulate unchecked (Cozolino, 2006, 2010; Siegel 1999; Wallin, 2007). However, within an Attachment Based Coaching approach, there may be the chance to increase attachment security and the brain structures associated with self-awareness, self-regulation, and resilience. Research in the field of sport psychology indicates that such developments may also result in the enhancement of athletic performance (Davis & Jowett, 2010; Gardner & Moore, 2004; Harmison & Casto, 2012; Jones, Hanton, & Connaughton, 2002).

The coach–athlete relationship, characterized by consistency, immediacy, intensity, and close interpersonal contact, coupled with the known antidepressive, anti-anxiety, and neurotrophic effects of aerobic exercise, may put this particular type of relationship in a privileged position to enhance attachment security. Cozolino (2006) wrote that "the teenage brain undergoes disorganization and reorganization from the onset of puberty into the early 20s" (p. 44). Siegel (2010b) explained, "The prefrontal regions, including the middle areas, do not mature fully until well into the mid-twenties" (p. 87). Cozolino (2006) wrote,

> What underlies this disorganization and reorganization of the social brain during adolescence and early adulthood? On the surface, there appear to be three social transitions taking place: (1) moving away from the family of origin, (2) establishing an identity and connection with a peer group, and (3) the creation of a new family. (p. 45)

Cozolino's claim may be relevant to some of the dynamics seen in athletes during their adolescence and young adulthood. Frankel (1998) explained, "What is therapeutic for adolescents is to be granted the opportunity to reveal themselves in the context of a genuine relationship" (p. 4).

Levine and Heller's (2010) work on attachment in adult romantic partnership also has strong parallels to the partnership between a coach and an athlete and is relevant to the Attachment Based Coaching model.

> Our partners powerfully affect our ability to thrive in the world. There is no way around that. Not only do they influence how we feel about ourselves but also the degree to which we believe in ourselves and whether we will attempt to achieve our hopes and dreams. Having a partner who fulfills our intrinsic attachment needs and feels comfortable acting as a secure base and safe haven can help us remain emotionally and physically healthier. (p. 33)

They also indicated that the converse is true. “Having a partner who is inconsistently available or supportive can be a truly demoralizing and debilitating experience that can literally stunt our growth and stymie our health” (pp. 33-34).

Tatkin (2011) also wrote about attachment in romantic relationships and underscored the importance of rapport as well as prompt repair:

> A secure relationship is characterized by playfulness, interaction, flexibility, and sensitivity. Good feelings predominate because any bad feelings are quickly soothed. . . . It’s a place where we can expect fun and excitement and novelty, but also relief and comfort and shelter. (p. 49)

The qualities of playfulness and flexible engagement, excitement and novelty, as well as comfort, shelter, and interactive repair that Tatkin described as so important to secure romantic relationships are also hallmarks of a secure, integrated, and integrating coach–athlete relationship.

Asymmetric Relationships

Regarding authenticity and the nature of the therapeutic relationship, Johnson (2004) wrote,

> The genuineness of the therapist, how real and present he or she is able to be, is a crucial aspect of the alliance. This does not mean that the therapist is impulsive or always self-disclosing, but that the therapist is accessible and responsive to the client in a way that the client can trust. The therapist can then admit mistakes, and allow clients to teach him or her about their experience. In short, the therapeutic relationship is a real human encounter, which the therapist takes on with integrity. (p. 61)

Wallin (2007) made a similar point regarding the therapeutic relationship, and discussed the important dimension of what he called *relational asymmetry*.

> The therapeutic relationship is characterized not only by . . . mutuality but also by asymmetry. . . . The therapist’s training, clinical experience, and personal therapy (if not personal history) often confer advantages the patient may lack. These include—most importantly—a well-developed capacity to tolerate, recognize, and

> make sense of our own feelings and those of others, as well as an experientially derived recognition of the power of the unconscious.
>
> In addition, the roles of therapist and patient are very different: One is there to help, the other to receive help. (p. 261)

Each of the preceding points has relevance to the coach–athlete relationship. Siegel (1999) expressed a similar concept in the following terms:

> In therapist-patient and teacher-student relationships—which like parent-child relationships, are "asymmetric"—the sensitivity to signals is the primary responsibility of the former individual, who serves as the sole "attachment figure" providing a safe haven and secure base for the other. (pp. 88-89)

The coach bears a distinctive burden of responsibility in working with athletes. The arenas of sport are fraught with potentially stressful experiences that range from the demands of training and racing, to injury, to team dynamics, to the pressures of balancing the pursuit of sport with one's life outside of sport. Consistent, sensitive, appropriate, and attuned responsiveness from the coach may help to foster a sense of security within the coach–athlete relationship. By being consistently available in such ways, the coach may fulfill the functions of safe haven, secure base, and proximity that have been demonstrated in the psychological literature to be fundamental in the development of secure attachment (Cozolino, 2010; Siegel, 2010a; Wallin, 2007).

Bonding, Vulnerability, and Social Rejection

There is the potential within the coach–athlete relationship for the development of a deep and abiding bond. The relationship, although professional, can include a significant personal involvement on the part of both the coach and the athlete. It is a real relationship of trust and attunement, vulnerability and self-expression, caretaking and co-regulation. Because of the emotional connection, both coach and athlete are at times vulnerable to hurt feelings from perceived or actual misattunements and slights (Hughes

& Baylin, 2012; Siegel, 2010b). Hughes and Baylin (2012) wrote about emotional vulnerability in the parent-child relationship:

> Emotional pain and physical pain are processed similarly in the brain. . . . When parents approach children anticipating positive reactions and instead the children react nonverbally (and, perhaps, verbally) in a way that parents perceive as negative, the brains of these parents may activate this social rejection system. Parents might then respond to this emotionally painful experience much like they would to physical pain: by drawing away and becoming protective themselves. . . . The activation of the social rejection system inevitably creates a visceral feeling. . . . This "gut reaction" registers in the insula, that part of the brain that receives input from the visceral parts of the body, including the heart, lungs, and stomach region. (p. 98)

Referring to the concept of relational asymmetry in caretaking, Hughes and Baylin (2012) noted that "emotion regulation, in relation to parenting, is all about maximizing the ability to stay in the open-minded state associated with our smart vagal system and to recover effectively from defensive reactions" (pp. 145-146). A coach bears similar responsibility to a parent, particularly within an attachment-based coaching approach, for self-regulation, which is the platform for co-regulation. The responsibility for self-regulation in the asymmetric coach–athlete relationship is on the coach. Such self-regulation on the part of the coach may facilitate co-regulation with the athlete and may help to promote attachment security in the coach–athlete relationship (Cozolino, 2006, 2010; Hughes & Baylin, 2003; Siegel, 1999, 2010a; Siegel & Hartzell, 2003; Wallin, 2007).

Coach Training, Development, and Therapy

For a number of reasons, ranging from the asymmetrical nature of the coach–athlete relationship to the intrapsychic challenges that the coach–athlete relationship may present, it may be valuable for coaches to participate in their own therapeutic work and continuing education with respect to psyche and sport. Because of the hard-wired impulse

to take things personally in close relationships, it may be of value for coaches to have professional support in the form of psychotherapy, supervision, mentoring, or collegial consultations. Hughes and Baylin (2012) noted,

> Attunement, reflection, and "relational thinking" is pretty heavy lifting in brain terms and requires the use of these more complex regions of your brain, the last ones to mature and the first ones to shut down on you when you are experiencing too much stress. (p. 189)

The coach's emotionally engaged presence, attunement, and resonance with the athlete or team during intensive training place physical and emotional demands on the coach as well. The coach and athlete are in a comprehensive process together. In the Attachment Based Coaching model, as a result of the attunement, resonance, and co-regulation between the coach and the athletes, the coach will feel what the athletes are feeling and help each one to regulate his or her own internal state. At times it may be necessary or helpful for the coach to have a therapeutic outlet to support the coach's capacities for attunement, self-regulation, and balance within the coach–athlete relationship. Siegel (2010a) wrote,

> True attunement is risky business. . . . We must be willing to go on a journey of discovery to find out what is really happening, being attuned to ourselves in the process, letting go of a feeling that we know everything or that we are in control of outcomes. Being open in this way may take us in directions we cannot predict, into areas that may require more time than we may think we have, into realms that make us feel uncomfortable, out of control, incompetent. (p. 43)

Although it is essential that coaches work from a solid foundation in sport performance theory, it is also true that coaching theory will only take one so far. Coaching from the heart, being vulnerable, and accepting the unknown all involve risk, but they are also the stances from which the greatest breakthroughs can occur.

In attachment terms, such breakthroughs would be reflected in a movement on the part of the athlete, but also by the coach, toward attachment security, self-regulation, integration, and resilience. According to the attachment literature, when attachment figures have made sense of their own attachment histories they are more likely to be able to experience attachment security with others. Working with a therapist is one of the primary ways for adults to move toward an earned secure status (Cozolino, 2006, 2010; Hughes & Baylin, 2012; Siegel, 1999, 2010a, 2010b; Siegel & Hartzell, 2003; Wallin, 2007). A coach's secure attachment status, whether inherent or earned, is integral to the Attachment Based Coaching model.

Making sense of the past. The transmission of attachment status across generations is a phenomenon that is well documented in the attachment literature (Siegel, 1999, 2010a, 2010b; Siegel & Hartzell, 2003; Wallin, 2007). Siegel (1999) noted, "A parent's 'state of mind with respect to attachment' is the most powerful predictor of how the parent-child relationship will evolve" (p. 118). Siegel (2010a) explained that this finding is applicable to parents, therapists, and other attachment figures. The literature also demonstrates that making sense of one's attachment history is the primary way to earn attachment security and to break the intergenerational transmission of insecure attachment. Siegel wrote,

> Those with difficult childhoods are likely to repeat those patterns of adaptations to sub-optimal experiences with their own children if they don't take the time or have the opportunity to make sense of their lives. We can imagine the implications of this research for the actions of therapists: If someone has an insecure adult attachment status, their own patients will likely be treated in ways that reflect that insecure history. It is essential for all people in the healing arts to care for themselves—which includes creating a coherent narrative of their own lives. (pp. 71-72)

If coaches do function as attachment figures, then the attachment literature suggests that, in the interest of generating healthy, balanced, and secure relationships with their athletes, it is critical for them to address and make sense of their own attachment histories (Siegel, 1999, 2010a, 2010b; Siegel & Hartzell, 2003; Wallin, 2007). As Siegel (2010b) wrote, "The best predictor of a child's security of attachment is not what happened to his parents as children, but rather how his parents made sense of childhood experiences" (p. 171). Applying this principle to the coach–athlete relationship, if a coach has a history of insecure attachment, but later makes sense of that attachment history, then the coach is in a better position to provide safety, security, and attuned, contingent communication to the athlete, all of which help to support attachment security.

Siegel and Hartzell (2003) expressed a sense of hopefulness with respect to the possibility of updating models of attachment. They also wrote about the positive outcomes that may emerge from such a development. This is important for coaches as attachment figures, but also for athletes who have the chance to update their internalized models of attachment as well.

> We are not destined to repeat the patterns of the past because we can earn our security as an adult by making sense of our life experiences. In this way, those of us who have had difficult early-life experiences can create coherence by making sense of the past and understanding its impact on the present and how it shapes our interactions. . . . Making sense of our life stories enables us to have deeper connections . . . and to live a more joyful and coherent life. (p. 248)

Sharing security. Levine and Heller (2010) described how the attachment security of one partner functions to stabilize an adult romantic relationship and help the partner with an insecure attachment history move toward earned security. This finding may have an analog in the coach–athlete relationship. They wrote,

> It's no surprise that secure couples—those in which both partners were secure—functioned better than insecure couples—those in which both partners were either anxious or avoidant. But what was more interesting was that there was no observed difference between secure couples and "mixed" couples—those with only one secure partner. . . . So not only do people with a secure attachment style fare better in relationships, they also create a buffering effect, somehow managing to raise their insecure partner's relationship satisfaction and functioning to their own high level. (pp. 132-133)

Levine and Heller noted that "people with a secure attachment style seem to function as effective-communication coaches—they report being good at getting others to open up and talk about personal things" (p. 226). Levine and Heller's findings are significant to the question of attachment in the coach–athlete relationship, and suggest that attachment security in the coach may help to move an athlete toward attachment security.

A coach's use of the self. Cozolino (2006) wrote that "parents' emotional availability to their children parallels their emotional availability to themselves" (p. 145). In a similar vein, Gottman (1997) claimed that "for parents to feel what their children are feeling, they must be aware of emotions, first in themselves and then in their kids" (p. 76). Johnson (2004) linked such findings on parenting to the therapeutic relationship.

> To achieve high levels of empathic understanding, the therapist not only has to immerse him- or herself in a client's world but also has to have access to his or her own experience as a reference point, so as to be able to tune in to the shape, color, and form of an emerging or only dimly sensed experience a client is accessing. The therapist has then to actively "use" his or her self to connect with the client's experience. . . . He or she can then often find the words that the client cannot find and help the client to unfold the implicit or hidden aspects of key experiences. (p. 57)

The same quality of attunement, resonance, communication, and co-regulation is at the center of Attachment Based Coaching.

Coaching From the Heart

Attachment Based Coaching is built upon the proposition that a coach can use his or her internal sense to help athletes develop an awareness of and a capacity to regulate their own internal states. In a passage that parallels the case for an attachment-based approach to coaching, Cozolino (2006) wrote of the therapeutic relationship:

> Therapists tend to undervalue the impact of the human relationship as they focus on diagnostics, treatment strategies, and management issues. The research suggests that the training of therapists should include more emphasis on skills related to resonance, attunement, and empathic aspects of treatment, and that personal psychotherapy should again become a mandatory part of training. This is not to say that the technical aspects of therapy are unimportant, but rather to counterbalance the trend toward understanding psychotherapy as a set of interventions we do *to* clients, with a relationship we have *with* clients. (pp. 311-312)

With respect to therapy, Newton (2008) stated, "We are currently in the throes of a paradigm shift away from an almost exclusive focus on the mind and its cognitive skills, back toward the importance of emotions, feelings, and body communication" (p. 2). The Attachment Based Coaching model suggests that the same type of shift would benefit the inner lives of coaches and athletes while also promoting the enhancement of athletic performance.

Wallin (2007) wrote that "our authentic personal involvement, emotional responsiveness, and unavoidable subjectivity, far from interfering, are essential features of every successful psychotherapy" (p. 171). Similarly, although it is vital to have a strong grounding in coaching theory and methodology, at times it is more important and effective to be able to abandon theory and coach from the heart. Siegel (2010a) wrote,

> Our job is not to be the one who knows everything, but the one who is present, attuned, and open for resonance. . . . Our heart rates align, breathing becomes in-sync, nonverbal signals emerge in waves that parallel each other. . . . The functions of our autonomic nervous system, balancing brake and accelerator in the

> coordination of heart and brain, become aligned as we resonate with each other. (p. 57)

"When we feel resonance with someone, we open the doorway to a sense of feeling safe and seen, comforted and connected. The brain's response to such attuned connection is to create a state of openness and trust" (p. xxi). Such a feeling of trust is key to one's sense of security and confidence as well as one's willingness to be vulnerable and to take risks.

The feeling of trust is essential for attachment security (Cozolino, 2006; Johnson, 2004; Siegel, 2010a, 2010b; Wallin, 2007). According to Siegel (2010a, 2010b), trust is built upon a sense of safety. A sense of safety is necessary to enter and sustain a receptive rather than a reactive internal state. The receptive state is crucial to presence, response flexibility, attunement, and resonance. Being in a receptive state is therefore essential for learning, focus, exploration, and interpersonal connection (Siegel, 2010a, 2010b). I have developed a concept that links the experiences of resonance, safety, trust, focus, awareness, and learning in the coach–athlete relationship. This concept is called *emotional priming*.

Emotional Priming

Emotional priming is an attachment-based intervention in which the coach uses his or her capacities for attunement, resonance, and contingent communication in order to help the athlete or team regulate their internal states and move toward receptivity rather than reactivity. As Siegel (2010b) noted, when one is in the receptive state,

> The muscles of the face and the vocal cords relax, blood pressure and heart rate normalize, and we become more open to experiencing whatever the other person wants to express. A receptive state turns on the social engagement system that connects us to others. (p. 215)

The coach's tone of voice coupled with verbal and nonverbal signals that are calm and receptive, energized, focused, and engaged can all, through mirroring and resonance, help the athlete to achieve similar states.

> Communication is much more than "just talking," which may simply involve lectures and information giving. Communication has nonverbal and verbal components. . . . The deepest, most personal meanings are conveyed nonverbally, through voice prosody (modulations and rhythms), facial expressions, eye gaze . . . as well as gestures and movements. . . . It facilitates both emotional regulation and reflective functioning. . . . We call this way of communicating *affective-reflective dialogue*. (Hughes & Baylin, 2012, p. 139)

Hughes and Baylin (2012) suggested that "affective-reflective dialogue . . . is the most direct means for activating and maintaining the function of the social engagement system" (p. 139), and Siegel (1999) wrote that "emotional engagement enhances learning" (p. 253). Emotional priming takes place at the nexus of these two assertions.

Emotional priming helps to put athletes in a receptive state for a more comprehensive engagement with coaching. Optimally such engagement includes entering states of resonance with the coach in order to feel their way through the key elements of the upcoming session. In an Attachment Based Coaching paradigm, the coach explains not only the intervals and intensities, but also the felt states that the athlete can expect to experience. This can help an athlete to become aware of different internal states and experiences as well as how to manage and regulate them. Siegel (2010b) noted that one develops awareness of internal states through the attention of caregivers and attachment figures. He wrote, "Learning to track internal states . . . is a refined skill that begins when we're children and continues throughout our lives" (p. 129).

Relevant to attention, awareness, and tracking internal states in training and sport, Siegel (2010b) indicated that repetition and "the careful focus of attention . . . can lead to

the strengthening of synaptic connections . . . [and that] . . . strengthening synaptic linkages between neurons is how we learn from experience" (p. 40). Emotional priming functions to put athletes into receptive states within which they are more attuned to verbal and nonverbal communication from the coach. More importantly though, emotional priming functions to put athletes into receptive states in which they can be more attuned to and aware of their own feelings and experiences. Such attunement and awareness along with the co-regulating presence of the coach may help athletes to widen their windows of tolerance and to develop greater capacities for self-regulation.

Dopamine, Rewards, and Training the Inner Dog

Cozolino (2006) noted that "relationships and addictive drugs both modulate the levels of neurochemicals in our brains, making us feel everything from misery to ecstasy" (p. 115). He explained that a range of "neurochemicals regulate our sense of safety, danger, despair, and joy" (p. 116), as well as "attachment, pair bonding, [and] empathy" (p. 62). Hughes and Baylin (2012) wrote that

> the reward system is heavily tied to the chemical dopamine, which is released into the nucleus accumbens when something pleasurable is encountered in life, including drugs of abuse. Once the dopamine system learns about a good thing, it stores a memory of it and then fires in anticipation of having that rewarding experience again. (p. 35)

Cozolino (2006) wrote that the dopamine reward system "becomes activated with an expectation of social reward, such as when we anticipate positive attention" (p. 62). This understanding is essential for coaches because positive attention and praise from the coach are stimuli that can strengthen the coach–athlete bond and also serve to activate the dopamine reward system in the training and racing environment (Linden, 2011; Pryor, 2002). Linden (2011) explained,

> Here's the central insight: Experiences that cause the dopamine-containing neurons of the VTA [ventral tegmental area] to be active and thereby release dopamine in their targets (the nucleus accumbens, the prefrontal cortex, the dorsal striatum, and the amygdala) will be felt as pleasurable, and the sensory cues and actions that preceded and overlapped with those pleasurable experiences will be remembered and associated with positive feelings. (p. 18)

In the context of sport and the coach–athlete relationship, such sensory cues can include the coach's praise and affirmation such as "Good!" and "Yes!" Furthermore, depending on the emotional impact the coach desires, coaching cues can be given in a positive, enthusiastic, energized tone of voice, or at times a calming or focused tone of voice. When given at the instant that an athlete executes a technique or enters a felt state, coaching cues are a powerful tool to signal the athlete and capture the moment of the action (Pryor, 2002). Such cues may also function to stimulate the dopamine reward system and to communicate the coach's presence, engagement, and resonance. Each of these outcomes may have the potential to encourage the development of secure attachment (Cozolino, 2006, 2010; Hughes & Baylin, 2012; Siegel, 1999, 2010a, 2010b; Siegel & Hartzell, 2003; Wallin, 2007).

Groundbreaking animal trainer Karen Pryor (2002) explained, "A reinforcer is anything that, occurring in conjunction with an act, tends to increase the probability that the act will occur again. . . . It is the secret of good training" (p. 1).

> There are two kinds of reinforcers: positive and negative. A positive reinforcer is something the subject wants, such as food, petting, or praise. A negative reinforcer is something the subject wants to avoid—a blow, a frown, an unpleasant sound. (The warning buzzer in a car if you don't fasten your seat belt is a negative reinforcer). (p. 1)

The coach's voice, attention, engagement, and praise are all reinforcers.

According to Pryor (2002), a stimulus is "anything that causes some kind of a behavioral response" (p. 68). "Good stimulus control is nothing more than true

communication—honest, fair communication. It is the most complex, difficult, and elegant aspect of training with positive reinforcement" (p. 97). Particularly salient to the Attachment Based Coaching paradigm, Pryor (2002) wrote, "A curious but important corollary to training by reinforcement is that it breeds affection in both subject and trainer" (p. 160).

In the Attachment Based Coaching model, coach communications are intentionally structured to help an athlete feel safe, secure, seen, and supported. Often, coach–athlete communication is intended to help down-regulate the athlete's nervous system; at times, though, the objective is to help an athlete up-regulate the nervous system. In all, the coach's verbal and nonverbal communication is aimed at helping the athlete to focus, perform, and execute, while also developing internal awareness and the ability to self-regulate. From an attachment perspective, the coach's contact and communication is intended to help the athlete to become more present to and aware of his or her internal states and feelings. Such contact is at the heart of integration and intimacy.

The Coach–Athlete Relationship

Training can be a sustained experience of active and intensive internal attunement and self-regulation not available elsewhere. By virtue of the consistent somatic attunement, resonance, and co-regulation between the coach and athlete, coupled with the explicit communication of those experiences, the coach and athlete may have an opportunity for repeated experiences of deep contact, relatedness, vulnerability, and trust. Such contact may build confidence that the coach's attunement is accurate, that the coach's feedback is valuable, and that the coach is consistently present, interested, and invested. Such contact is inherently therapeutic. As Siegel (1999) wrote,

> When interpersonal communication is "fully engaged"—when the joining of minds is in full force—there is an overwhelming sense of immediacy, clarity, and authenticity. It is in these heightened moments of engagement, these dyadic states of resonance, that one can appreciate the power of relationship to nurture and to heal the mind. (p. 337)

The attachment literature indicates that it is the establishment of rapport, the building of trust, and attunement to nonverbal signals in the present moment that are all essential elements of secure attachment in a new therapeutic relationship (Cozolino, 2006, 2010; Hughes & Baylin, 2012; Johnson, 2004; Siegel, 1999, 2010a, 2010b; Siegel & Hartzell, 2003; Wallin, 2007). Rapport, trust, attunement, presence, and communication are all of fundamental importance to the coach–athlete relationship. Although the coach–athlete relationship is not psychotherapy, it would seem that there is potential for it to be profoundly therapeutic nonetheless. Wallin (2007) observed that the consistent and attuned presence of a psychotherapist has the potential to provide the client with a relational experience of a secure base that may itself be the most powerful therapeutic intervention. Based on the literature in attachment and neuroscience, along with my personal experiences across nearly two decades of coaching, it would seem that the coach–athlete relationship holds a similar potential for therapeutic effect. An attachment-based approach to coaching may provide athletes with opportunities for greater security of attachment and an environment in which athletes and coaches might update internalized models of attachment. Fundamental to this process are the coach's capacities to build rapport with the athlete, to listen to and communicate with the athlete at a deep interpersonal level, and to connect with the athlete in such a way that the athlete feels seen, felt, heard, understood, and genuinely cared for.

Siegel and Hartzell (2003) explained that

> an individual's attachment can move toward security with the emotional connections of collaborative relationships. . . . As we learn to apply the processes of contingent communication, response flexibility, rupture and repair, emotional connection, and reflective dialogues to our interactions with our children, we promote security of attachment. (pp. 247-248)

Opportunities to engage in these very processes are inherently available within the coach–athlete relationship. Coaches who intentionally cultivate these dimensions of relatedness with their athletes may enhance the likelihood of developing secure attachment within the coach–athlete relationship. Secure attachment may benefit both the coach and the athlete within the coach–athlete relationship, but also in their relationships outside of sport. The findings also suggest that the same brain structures and processes that are associated with secure attachment are associated with the enhancement of athletic performance.

Sport psychologist Terry Orlick (2008) highlighted the importance of rapport in the coach–athlete relationship:

> At the high-performance level, almost all coaches are competent with respect to technical and tactical skills. What separates great coaches from the rest are people skills. Outstanding coaches are masters at communicating and building respectful, trusting relationships.
>
> Truly great coaches significantly influence the lives of athletes and performers and help them grow as performers and people. They have mastered the art of coaching people largely because they made a commitment to fine-tune their capacity to listen, respect, challenge, support, and believe. (pp. 270-271)

In "The Psychology of Performance in Sport and Other Domains," sport psychologist Kate Hays (2012) compared the skills associated with effective coaching and psychotherapy. She noted that "certain techniques, such as reframing, active listening, [and] empathy . . . are the province of both coaching and psychotherapy" (p. 27). Basic psychotherapeutic interventions such as rapport building, active listening, reframing,

content and process reflections, open-ended questions, empathy, validation, positive reinforcement, scaffolding, and positive regard are all key skills in the Attachment Based Coaching model.

Stress Assessment and Reduction

Emotional priming is an intervention aimed at elevating an athlete's state of receptivity and attunement, or similarly, to reduce an athlete's reactivity and acute stress. Siegel (2010b) wrote, "In a nutshell, receptivity is our experience of being safe and seen; reactivity is our fight–flight–freeze survival reflex" (p. 215). As outlined in Chapter II, receptivity is supported by the myelinated branch of the vagal system, whereas reactivity is induced by excessive activation of the sympathetic nervous system or triggering of the unmyelinated branch of the vagal system (Cozolino, 2006; Hughes & Baylin, 2012; Porges, 2011; Siegel, 2010b).

Regarding the importance of stress reduction in psychological practice, Cozolino (2010) maintained that

> assessing and targeting stress as a focus of psychotherapeutic intervention should always be an aspect of healing relationships. . . . Understanding and working to regulate our clients' stress is central to psychotherapeutic success because of its impact on neuroplastic processes. (p. 350)

Hughes and Baylin (2002) explained that stress can also inhibit the dopamine reward system.

> Under significant stress, even if you have a well-developed reward system, this system may be suppressed or knocked out, at least temporarily, by your stress reaction system—specifically, by stress hormones. So, when your stress system is on, your reward system is probably off. (p. 32)

Working with athletes to identify and reduce stressors is vital to the coach–athlete relationship as well as to the athlete's success, performance, and satisfaction. Given that

training is inherently stressful, it is incumbent on coaches and athletes to work collaboratively to identify and reduce sources of stress inside of the training environment as well as those in the athlete's life outside the realms of training and racing.

The literature also indicates that excessive stress impairs immunity (Cozolino, 2010). Athletic success is contingent upon consistency in training. Illness and injury disrupt an athlete's ability to train, undercut performance, and contribute to a cycle of increasing stressors. Reducing athlete stress, along with the use of emotional priming, can help to increase athlete receptivity, attunement, and internal regulation, all of which are vital to attachment security as well as the enhancement of athletic performance.

The Application of ABC Principles to Psychological Skills Training

In "Emotion Regulation and Performance," sport psychologist Martin Jones (2012) described self-talk, relaxation, imagery, and goal setting as the "workhorses in the applied sport psychology canon" (p. 163). Other sport performance-oriented psychological skills include: arousal control, energy management, mental focus, mental preparation, the practice of routines, and the strengthening of self-confidence and composure (Gardner & Moore, 2004; Jones et al., 2002; Orlick, 2008). Each of these psychological skills can be reinforced, elevated, and more deeply integrated with an attachment-based approach to coaching.

Self-talk. The attachment schemas that one develops during infancy and childhood generate an internal sense of how one sees oneself and expects to be viewed in the world (Cozolino, 2006, 2010; Siegel & Hartzell, 2003; Wallin, 2007). In the context of sport, an athlete's internalized models of attachment may have an impact not only on the athlete's expectations and view of his or herself, but also on the nature of the athlete's

positive or negative self-talk. As Siegel and Hartzell (2003) noted, “How we come to talk to ourselves is shaped by how others have come to talk to us” (p. 97). Athlete self-talk does not occur in a vacuum. An athlete’s sense of self and self-talk are largely grounded in the athlete’s attachment history as well as the relative security or insecurity of the coach–athlete relationship. The attachment literature suggests that security within the coach–athlete relationship can strengthen an athlete’s sense of self and therefore improve athlete self-talk (Cozolino, 2006, 2010; Siegel & Hartzell, 2003; Wallin, 2007).

There is a parallel between the mechanics of positive self-talk and those of secure attachment. For positive self-talk to be accurate and effective, it must arise from an athlete’s engagement with and attunement to the circumstance. Like contingent communication with an attachment figure, positive self-talk generated within the athlete must feel aligned with the athlete’s sense of the experience. For instance, if an athlete is physically and emotionally challenged by hills on the bike, then an example of negative self-talk might be “I’m the worst at hills!” If that athlete’s parent or coach were cheering, “You’re awesome at hills!,” that would reflect a lack of attunement and would likely be ineffective at best. The same holds true for the internal phrasing of positive self-talk. For the athlete in this example, rather than inwardly declaring something false and insubstantial such as “I’m the best at hills,” a more effective, accurate, and affirming positive self-talk expression might be “I’m getting stronger at hills” or simply “smooth, steady, strong.”

At its best, positive self-talk is the internalized voice of a balanced, attuned, and encouraging coach. In the context of attachment, such an internalized voice reflects the development (or nascent development) of an internalized secure base. The development

of such an internalized secure base is integral to a range of outcomes that have been demonstrated to enhance attachment and performance including self-regulation, focus, composure, response flexibility, and resilience.

Relaxation.

Meditation, mindfulness, focus, and the breath. Wallin (2007) indicated that "meditation with a focus on the breath" (p. 163) provides similar self-regulatory benefits as a secure relationship with a therapist or other attachment figure.

> The regular exercise of mindful awareness seems to promote the same benefits—bodily and affective self-regulation, attuned communication with others, insight, [and] empathy . . . that research has found to be associated with childhood histories of secure attachment (Siegel, 2005, 2006). . . . Mindfulness and secure attachment alike are capable of generating—though by very different routes—the same invaluable psychological resource, namely, an internalized secure base. (p. 6)

The presence of a secure base, whether provided by an attachment figure or generated internally, "makes resilience and exploration possible" (p. 67). A secure base allows for exploration because it alleviates vigilance against threat (Cozolino, 2006, 2010; Siegel, 2010a, 2010b). "Focusing on our breathing, and knowing that we can redirect our attention to the breath . . . helps foster a relatively calm, unguarded state of mind" (Wallin, 2007, pp. 163-164).

Linden (2011) drew some parameters to clarify the practice of meditation:

> In her book *The Blissful Brain*, Shanida Nataraja offers these criteria: (1) it must involve a specific technique that is both clearly defined and taught (spacing out in the shower doesn't count), (2) it must involve progressive muscle relaxation, (3) it must involve a reduction in logical processing, and (4) it must be self-induced (thereby excluding the use of drugs or hypnosis). The range of techniques that fall within these boundaries is actually quite large. While all meditative practices involve the conscious regulation of attention and emotion, beyond these basic criteria there is substantial variation. (pp. 157-158)

Training for sport abounds with opportunity for the practices of meditation, breath work, progressive relaxation, and mindfulness. The application of these practices is limited only by the creativity and receptivity of the coach and athlete.

Meditation has been shown to strengthen the insula and the anterior cingulate cortex, brain structures involved with internal awareness, self-regulation, empathy, resonance, and attachment (Hughes & Baylin, 2012; Siegel, 2010b; Tatkin, 2011). Mindfulness helps to encode explicit memories via hippocampal involvement (Siegel, 2010b; Siegel & Hartzell, 2003). Siegel (2010a) wrote that "similar to a physical fitness program, a mindful awareness practice done every day can keep our brains healthy by creating and maintaining the integration of our neural circuits" (p. 233). Seen in this light, every step, every stroke, and every breath in training is an opportunity for regulated, present-focused awareness as well as neurogenisis, myelination, and integration.

Ekman (2003) offered an explanation for the self-regulating effect of mindfulness meditation and a focused awareness on the breath:

> The very practice of learning to focus attention on an automatic process that requires no conscious monitoring creates the capacity to be attentive to other automatic processes. We breathe without thinking, without conscious direction of each inhalation and exhalation. . . . Learning to focus our attention on breathing takes daily practice, in which we develop new neural pathways that allow us to do it. And here is the punch line: these skills transfer to other automatic processes—benefiting emotional behavior awareness and eventually, in some people impulse awareness. (p. 239)

There are a number of practices that can help to ground an athlete's attention in the present moment and deeply in the body. Wallin (2007) wrote that "awareness of the breath—particularly, respiration that is deep and relatively slow—is a gateway to a more mindful experience, including experience of the body. It can bring us back to the here and now" (p. 297). Wallin also explained that "breathing out reduces firing in the amygdala"

(p. 82) and that the focused exhalations of meditation and intentional breath work can have a calming effect on the brain and the body.

In training, an athlete can focus on the breath, noticing its depth and rate, sound and feel. Similarly, an athlete can attune to the sound and feel of cadence in stroke and stride. Focusing on cadence and breath may help to ground an athlete's awareness in the body and in the moment. Similarly, attending to posture, technique, seat, or stance can help an athlete to concentrate in the immediacy of performance. These Attachment Based Coaching interventions may help an athlete to develop the skills of internal awareness, self-regulation, focus, presence, and relaxation.

Breath in action. My athletes do a swim set in which they execute a series of maximum intensity 50-meter efforts. The rest interval is five seconds, but rather than having them watch the clock, I have them rest for the duration of three full breaths. Tatkin (2011) wrote, "Taking a deep, slow breath, particularly a slow exhalation, stimulates our smart vagus" (p. 35), and Siegel (2010a) maintained that "abdominal breathing is more relaxing than chest-breathing" (p. 27). This set trains them to down-regulate their sympathetic nervous systems.

Explaining this session to them is an example of emotional priming, mirroring, resonance, and nonverbal communication. As they sit in the hot tub, I talk them through the objective of the session and the intensities that will be required. I physically demonstrate what it looks like to finish the 50, swimming at maximum effort into the wall. I use body language to simulate what they will experience. I close my eyes, recenter, focus, breathe, and relax.

Even before they jump in the water, they have begun to feel the range of intensities within the session and sensed their ability to internally regulate through the set. I instruct them to relax their bodies, close their eyes, and focus on each full breath during their rest. On the third breath, I tell them to gently open their eyes. I use my body to demonstrate dropping back under the water with focus and calm, compressing against the wall to rebuild a charge, and then exploding to attack the next 50.

When they swim the set, I stand at the edge of the pool. I squat down so that I am in close contact with each athlete as they crash into the wall. With the draw and release of each respiration I say in a smooth, soothing, and even tone, "Breathe. Relax. And go."

Imagery and visualization.

Defining imagery and visualization. Imagery and visualization are vital parts of mental training in sport (Cumming & Williams, 2012; Taylor & Schneider, 2005). Visualization is a way of learning and rehearsing (Cozolino, 2006; Cumming & Williams, 2012). Relevant to Attachment Based Coaching, Jennifer Cumming and Sarah Williams (2012), experts in imagery for sport performance, wrote, "A main function of imagery is to aid self-regulation of thoughts, feelings, and behaviors, and it is a characteristic of successful performers" (p. 213). They also explained,

> Imagery is a cognitive process fundamental to motor learning and performance. When we consciously internally represent an action through imagery, the same brain areas involved in the unconscious planning and execution of movements are activated (Lotze & Halsband, 2006; Munzert, Lorey, & Zentgraf, 2009). Importantly, imagery shares neural and behavioral similarity to the genuine experience. (p. 213)

Wallin (2007) shared a similar finding applicable to attachment in psychotherapy.

> Contemporary neuroscience, in dissolving the presumed boundaries between perception and motor action, demonstrates that—as far as the brain is concerned—there is much less difference between lived and imagined experience

> than we have previously supposed. The implication here is that therapeutic change may be promoted through imagining new behavior as well as by actually behaving in ways that are new. (p. 303)

I would suggest that a parallel assertion can be made with respect to both attachment and performance within the Attachment Based Coaching model.

Sport psychology authors Jim Taylor and Terri Schneider (2005) made a distinction between the terms *visualization* and *imagery*. They also indicated that there is a different felt sense to the experiences of visualization and imagery.

> Many sport psychologists, coaches, and athletes use the term "visualization" to describe this tool. But visualization places too much emphasis on its visual component. The power of this technique lies well beyond its visual aspects. The most effective imagery involves the complete, multi-sensory reproduction of the actual triathlon experience. (pp. 173-174)

Imagery enables an athlete to see and feel optimal performance, focus, and intensity, to experience and manage race stresses, and to feel and regulate emotions (Taylor & Schneider, 2005). Imagery and visualization also affect the integration of the psyche and of structures within the brain (Cumming & Williams, 2012). Regarding emotion and mental training, Ekman (2003) wrote, "Imagination is still another way in which we can bring about an emotional reaction. If we use our imagination to create scenes that we know make us emotional, we may be able to cool off a trigger" (pp. 33-34).

Imagery in action. When working with my athletes on guided imagery, I cue them with feeling words such as relaxed, focused, strong, smooth, and confident. I help them to sense, embrace, and regulate their feelings of intensity and arousal. I cue all of their body senses and ground the imagery in the felt experience of the race—the sun, the air, the road, the desert or the trees, the smell of the earth or the asphalt or the sea, the bike as it resonates with the crisp, staccato shift of gears, the steady hum of cadence, and

the texture of the road. I have them recall the sound and feel of their breath. I cue them see and feel themselves executing best technique with fluidity, power, and grace. We use imagery to explore a range of scenarios, to train best technique, to prepare, and to learn.

Visualizing is a form of mental training. Similarly, the act of watching the coach or another athlete demonstrate and describe techniques simulates the experience internally through the activation of mirror neurons (Cozolino, 2006, 2010; Hughes & Baylin, 2012; Siegel, 1999, 2010a, 2010b; Siegel & Hartzell, 2003). "Because mirror neurons link observation and motor programs, observing becomes a way to rehearse" (Cozolino, 2006, p. 188). "Musicians and athletes who imagine practicing their instruments or sports not only attain excellent results in terms of maintaining and advancing their physical skills, but they have demonstrated alterations in brain growth as a result of this mental activity" (Siegel, 2010a, pp. 12-13).

Imagery and visualization can build confidence, composure, response flexibility, relaxation, and self-regulation. Progressive relaxation and guided visualization exercises require a sense of trust between the coach and athlete because, for some, the mechanics of these practices may cause feelings of exposure and vulnerability. Undertaken with sensitivity and attunement, such training can reinforce, enrich, and build trust in the coach–athlete relationship and also strengthen the brain structures associated with secure attachment. As Siegel and Hartzell (2003) observed, "activities such as guided imagery . . . increase awareness of sensations in the body, and stimulate the right side of the brain" (p. 136).

Goal setting. Although there are protocols for goal setting, it is beyond the scope of this thesis to address those at length. In the Attachment Based Coaching model,

however, goal setting is framed within the broader context of collaborative and contingent communication and nonintrusive support. In the asymmetric coach–athlete relationship, the coach offers guidance and helps an athlete to reframe, refocus, and repair when progress toward the goal is challenged. Working toward goals in this way builds trust and intimacy, both of which are essential for secure attachment.

Focus and the Secure Base

From the perspective of attachment, performance-oriented focus in sport can arise when an athlete has an external or internalized secure base. A secure base provides the athlete with a sense of safety. That sense of safety and security allows an athlete to be immersed in focus on performance rather than devoting attention to the maintenance of a vigilant guard against threat or the management of anxiety. An athlete's movement toward attachment security may support the performance enhancing benefits of mental focus, energy management, and arousal control. In language that reflects the secure base function of attachment, Orlick (2008) wrote, "Focus allows you to continue to learn, experiment, grow, create, enjoy, and perform closer to your capacity" (p. 12).

Resilience

Attachment security in the coach–athlete relationship may support an athlete's ability to maintain focus in training and competition. Additionally, as Wallin (2007) noted, having a secure base is a key factor in the development of resilience. Resilience can enable an athlete to regain focus in the face of challenge or threat during competition and training. Ekman (2003) explained that the most common stimulus for emotion is the sense that something that seriously affects one's welfare is happening or about to happen. Vagal tone and the myelinated vagal system are key elements to one's ability to remain

calm, focused, and composed, or to quickly return to such states, rather than becoming reactive when faced with emotional activation. An athlete's capacity to down-regulate the sympathetic nervous system and to maintain response flexibility, both vital to the development of resilience, can be built through the consistent regulating presence and attuned, contingent communication of the coach. The capacity to regulate emotional states, as well as to rebound from emotional dysregulation, may be strengthened by a relationship of secure attachment as well as an internalized secure base.

Siegel and Hartzell (2003) wrote, "A nurturing relationship with someone other than with a parent in which the child feels understood and safe provides an important source of resilience" (pp. 102-103). Calling attention to the regulating force that mindfulness can provide as well as the resilience that can stem from such regulation, Wallin (2007) wrote,

> Mentalizing and mindfulness alike are associated with the internalized secure base that makes resilience and exploration possible. Moreover, both are capable of fostering insight and empathy, affect regulation and the sense of personal agency, internal freedom and the capacity to respond with adaptive flexibility to the complex, often difficult, circumstances with which our lives confront us. (p. 67)

Resilience and focus are both fostered by secure attachment and both are crucial dimensions of mental toughness and high performance in sport and beyond.

Immediacy

Regarding immediacy and the practice of psychotherapy with athletes, clinical psychologist Zella Moore (2012) wrote in "Counseling Performers in Distress":

> No matter what treatment model or strategy we employ, psychological counseling is, by its very nature, an interpersonal enterprise. Our clients' actions within a session are likely to be consistent in one form or another with their actions outside of a session. (p. 540)

Once or twice a year, when my athletes line up on the track for a race simulation effort, I pause and instruct them to observe how they feel in the moments before we begin. I cue them to notice the thoughts that are cycling through their minds, to consider the positions they have chosen at the start line, and to sense their physical and emotional internal states. “This is how you race,” I say to them; “This is how you live your life.”

One could argue that the ways that athletes conduct themselves in training and racing, how they manage relationships with teammates, and how they experience the coach–athlete relationship are all reflections of how athletes conduct themselves in their lives beyond sport. Internalized models of attachment have a significant influence on all of those behaviors (Carr, 2012; Cozolino, 2006, 2010; Siegel & Hartzell, 2003; Wallin, 2007). In a quote that informs the use of immediacy in the coach–athlete relationship, Wallin (2007) wrote that what is “most desirable is to link the patient’s stated problems or goals with what is going on in the relationship with the therapist” (p. 202). In the Attachment Based Coaching model, an athlete’s conduct in training, racing, and relationships within sport are all access points for intimacy, awareness, and growth.

After the athletes have paused to observe their start position and their internal states at the start of our race simulation, I suggest that for this session they try something new, break out of the pattern, and take a risk. An athlete might line up differently, or change pacing strategy, or alter the narrative in his or her mind, but something has been done to help make conscious what may have previously been a largely unconscious process. As Siegel and Hartzell (2003) noted, “Awareness creates the possibility of choice” (p. 70). Focused attention and awareness harnesses the hippocampus helping to consciously structure and integrate explicit memories and mental modes (Cozolino, 2006,

2010; Siegel, 1999, 2010b; Siegel & Hartzell, 2003; Wallin, 2007). Such attention can support the enhancement of athletic performance.

Present-Centered Awareness

I train my athletes to focus their attention on the elements of performance that help to ground their awareness in the body and in the moment. I coach them to focus on the sound, rate, and feel of their breath. I have them attune to their posture, seat, and stance. I have them listen to the sound of their cadence in stroke and stride. I cue them to feel the fine details of their bodies and minds as they repeat the techniques of swim, bike, and run. As such, my athletes are working on technique as an internal practice. By focusing their attention internally, athletes may begin to cultivate a deeper sense of self-awareness and a broader capacity for self-regulation. Hughes and Baylin (2003) defined mindfulness as

> open acceptance of the here-and-now experience, focusing on it without judgment, evaluation, or efforts to change it. Within such acceptance the individual goes deeper into the present moment, trying to experience it, understand it more fully, and to especially experience what is unique about it. (p. 200)

In training, rather than making an intrusive demand that my athletes make immediate and hard changes to a technique, I often have them observe first what they have already been doing. This may help to bring an athlete's conscious attention to the old or established mechanics, technique, or internal state. Once the pattern is brought to the athlete's awareness, the athlete has the opportunity to make explicit choices about what had otherwise been an implicit pattern. The athlete may then harness the power of the hippocampus to encode new conscious memories, new intentional mental modes, and new learning (Siegel, 1999, 2010b; Siegel & Hartzell, 2003; Wallin, 2007).

Focused attention to and awareness of technique, self-talk, and other mental modes can help to transition old, disorganized, implicit forms of memory into newly structured and integrated explicit memories (Cozolino, 2006, 2010; Siegel, 1999, 2010b; Wallin, 2007). When an athlete goes through the motions of a technique without focused attention and awareness, the athlete may operate as if the technique or self-talk is a result or reflection of something within him or her. This perspective may be persistent and unquestioned, but may not take into account that having participated in training without focus, attention, and awareness, the athlete has encoded those techniques and mental modes in implicit form.

Without focused attention, the athlete's technique is likely random and chaotic. Continuing to train without focus, attention, and awareness leaves an athlete's development to chance and subject to the unregulated influence of implicit memory. However, with focused attention and awareness, the athlete may be able to develop physical techniques as well as mental modes that are organized, intentional, and optimized for performance.

The coaching approach described above is similar to what Johnson (2004) described as an experiential and nonpathologizing approach to therapy. She explained that "the therapist's role is to help each client expand his or her awareness of . . . experience in the present moment in the session, [and to] integrate aspects that were excluded from awareness" (p. 42). "The experiential approach is then essentially nonpathologizing. The focus here is on growth through new experience and new ways of processing that experience" (p. 43).

Wallin (2007) wrote that "mindfulness consists of three elements—*awareness* of *present experience* with *acceptance*—we can focus our interventions on one or more of these elements at any given moment" (p. 330). When I direct an athlete to simply observe a part of his or her swim stroke, run posture, or pedaling technique, without changing it, the intention is to facilitate the athlete's developing self-awareness, and ultimately the athlete's capacity for self-regulation. Developing such essential attachment-based functions may strengthen brain structures such as the insula and the right hemisphere of the brain that are involved with broader self-awareness, self-regulation, empathy, response flexibility, and resilience. Such characteristics, associated with secure attachment, may also lead to the enhancement of athletic performance.

Resonance

Wallin (2007) advised that in an attachment-based therapeutic environment a therapist must preserve an awareness of his or her own internal states while tracking the internal states of the client. This distinction is pivotal within the Attachment Based Coaching paradigm as well. Wallin wrote,

> Observing our own bodily experience is no less important than observing the patient's. Because the brain's mirror neuron system ensures that we actually resonate autonomically with our patients . . . our bodily/emotional experience can simulate the bodily/emotional experience of the patient. (p. 296)

As a coach, the ability to attune to, resonate with, recognize, and collaborate with athletes about their bodily states is a vital tool with respect to performance. It is also a critical tool for the development and integration of brain structures associated with secure attachment.

When I attune to my athletes, I can feel their internal states of fatigue, tension, excitement, focus, intensity, relaxation, and emotion. I use this internal sense to coach my athletes with greater effectiveness and empathy. The research suggests that such

attunement and resonance activates the neural structures associated with attachment in the brains of my athletes as well as in my own nervous system.

Wallin (2007) expressed the importance of attunement and resonance in the therapeutic relationship. The following passage has similar salience for the coach–athlete relationship:

> We need to remind ourselves to "read" the language of the patient's body: the expressions of the face, the rhythm and tone of the voice, the pace and locale of the patient's breathing, as well as the nuances of posture, gesture, and the like. Just as important, we need to remember to pause and take a deep breath . . . in order to be able to sense what is going on inside us—not our discursive thoughts primarily, but rather our bodily and emotional experience. . . . Here we are looking into ourselves in order to know more . . . about the patient. (pp. 259-260)

Ekman (2003) indicated that witnessing someone else's emotional reactions may activate one's own emotions. In the context of the coach–athlete relationship this is a two-way street. The coach can attune to and feel the athlete's internal state, and the athlete can pick-up on and resonate with the coach's internal states. *Projective resonance* is a term that I have applied to the process in which a coach's internal state is generated in the athlete through mirroring and resonance.

Projective Resonance

Attuning to, and helping to regulate, athletes' internal states is at the heart of Attachment Based Coaching. Swim, bike, and run mechanics, bike fit, the athlete's level of energy, mental focus, and emotional state are a sample of the performance-oriented dimensions of the athlete's experience that the coach can attune to, help the athlete become aware of, and regulate. Similarly, athletes can attune to, resonate with, and mirror the coach's internal states. Given the asymmetrical nature of the relationship, as Wallin (2007) cautioned regarding the therapeutic relationship, the coach bears a responsibility

to manage his or her internal states when engaging with the athlete. Continuing with that rationale, the coach must also initiate repair when his or her internal states have intruded upon the athlete or dysregulated those of the athlete.

Resonance and projective resonance are powerful tools for the attachment-oriented coach. In the coach–athlete relationship, projective resonance is an intervention whereby the coach actively generates and embodies internal states in order to help evoke them within the athlete. In coach–athlete communication, it is often the nonverbal component that has a greater effect on the internal regulation of the athlete than the verbal component. Tone of voice, body posture, gestures, facial expression, vocal prosody, volume, and cadence all communicate information to the athlete. Often of necessity, due to fleeting opportunities for communication in training and racing, the coach's message must be rich, dense, and easily understood. By taking advantage of projective resonance, the coach's nonverbal communications and simulations of posture, technique, arousal, or emotion can be felt and activated within the athlete.

Effective use of projective resonance works in tandem with emotional priming. When an athlete feels safe, seen, secure, and supported, the athlete is more likely to be in a receptive rather than a reactive state. The athlete in a receptive state is more likely to; connect with, attune to, resonate with, and effectively communicate with the coach. Such states can help an athlete to focus, perform, and execute in training and competition. Ultimately, such states may also help the athlete to become more present, aware, and integrated. Such contact, within oneself and with others, is at the heart of transformative intimacy.

Making Faces: Facial and Skeletal Muscles

Ekman (2003) indicated that emotions have "unique signals, the most identifiable being in the face and the voice" (p. xix). He also wrote that there is a distinct, neurologically linked, facial expression for each of the seven universal, primary emotions. Other internal states such as heart rate, respiration, perspiration, muscular tension, and mental focus are all affected by the emotional state that one is experiencing. Ekman maintained that because of the neurologic link between facial expression and emotion, one can activate an emotion and its corresponding internal states by making the face associated with that emotion.

This is important information for the coach and athlete because a facial expression associated with heightened anger, sadness, or tension can activate a range of collateral physiologic responses that are unfavorable to performance. Similarly, a relaxed or neutral facial expression can activate internal states, specifically the down-regulation of the sympathetic nervous system, that support enhanced performance. However, as Ekman (2003) pointed out, "We have much better control over our bodily muscles and our words than we have for our facial muscles or the settings of our vocal apparatus" (p. 62). As a result, when in the grip of an emotion it is difficult to override the neurology that causes facial and vocal responses. Therefore, preemptively keeping the face and body relaxed or neutral may help to mitigate the neurologic dysregulation and performance declines associated with excessive fight or flight response and sympathetic nervous system activation.

As discussed in Chapter II, the more robust one's myelinated vagus and vagal tone, the more effectively one can recover from the dysregulation of emotional episodes

(Cozolino, 2006; Gottman, 1997; Porges, 2011). Resilience and response flexibility are among the rewards associated with attachment security. Furthermore, the mental focus and body awareness that help to strengthen those qualities are trainable skills. Cued by internal sensations or by the coach, an athlete can relax his or her face, neck, shoulders, arms, hands, feet, or any part of the body when feeling tense or fatigued, or when any dysregulating emotion begins to build.

As discussed earlier in this chapter, deep breathing with focused exhalation can facilitate relaxation (Ekman, 2003; Siegel, 2010a; Tatkin, 2011; Wallin, 2007). When feeling a rise in stress, emotion, or arousal, athletes can focus on abdominal breathing, body relaxation, and perhaps facial relaxation or neutrality as interventions to deescalate emotional dysregulation and performance decline. If an athlete can down-regulate arousal in the body and breath, the mind can follow. Similarly, if an athlete can calm and focus the mind, then the body and breath can follow.

Attuned Communication

The right brain, the insula, and the anterior cingulate cortex are all brain structures associated with empathy, secure attachment, internal awareness, and self-regulation (Hughes & Baylin, 2012; Siegel, 2010b; Tatkin, 2011). Meditation is one activity that has been demonstrated to strengthen the insula (Hughes & Baylin, 2012; Wallin, 2007). Intentionally attuning to an athlete's internal states may also strengthen the right brain, insula, and anterior cingulate of both the coach and the athlete. Attuned communication, in sport, and in all relationships, is driven by nonverbal cues (Cozolino, 2006; Siegel, 1999; Siegel & Hartzell, 2003; Wallin, 2007). Communication that is disengaged or intrusive is associated with insecure attachment, whereas communication that is engaged,

contingent, and sensitive to the autonomy of the other is associated with secure attachment (Cozolino, 2006, 2010; Siegel, 1999, 2010b; Siegel & Hartzell, 2003; Wallin, 2007).

In the following quote about competition, Orlick (2008) described an approach to coaching that is supportive of secure attachment. He wrote, "In the on-site performance phase, great coaches demonstrate their belief in their performers, support them in simple ways, and occasionally remind them of where their focus needs to be" (p. 271). Such coaching is engaged, attuned, and nonintrusive.

Performance Debrief and Training Journal

Nonverbal communication and its associated right-brain functions are vital to the Attachment Based Coaching frame. At the same time, explicit, left-brain mediated, direct verbal communication is also fundamental to an attachment-based coaching or therapeutic approach. The coach–athlete debrief is an opportunity to promote bilateral integration of the right and left hemispheres of the brain. Siegel (1999) described the importance of such integration in the development of secure attachment.

> Left-hemisphere-to-left-hemisphere resonance takes the form of verbal communication within a linear, logical mode of discourse. Right-hemisphere-to-right-hemisphere resonance involves the nonverbal components of communication, such as tone of voice, gestures, and facial expressions. In the co-construction of stories, parent and child enter into a dyadic form of bilateral resonance. . . . Secure attachment involves an intimate dance of resonant processes involving left-to-left, right-to-right, and bilateral-to-bilateral communication. This highly complex form of collaborative communication allows the dyad to move into highly resonant states, and also enables the child's mind to develop its own capacity for integration. Such a capacity may be at the heart of self-regulation. (p. 334)

Although nonverbal communication is palpable, visceral, and immediate, verbal exchange is an indispensable element of comprehensive, integrated, and integrating

communication. The coach–athlete debrief is a chance for the coach and athlete to speak about a range of details from a training or racing experience. Such details include technical elements of the performance, but also focus on internal feelings, emotional states, self-talk, thoughts, actions, intentions, and choices. This type of coach–athlete communication helps to elicit feelings, behaviors, and thoughts from their implicit and unconscious state and bring them into conscious and explicit form.

The coach–athlete debrief may help to foster the integration of left- and right-brain processes. As Cozolino (2006) wrote, "Language, in combination with emotional attunement, creates the opportunity to support neural growth and network integration" (p. 232). The coach–athlete debrief also has the potential to strengthen rapport, build trust, and promote attachment security in the coach–athlete relationship.

In the absence of a coach, or as a complement to the coach–athlete relationship, it may be helpful for an athlete to keep a training and racing process journal. The heart of this journal would be in the athlete's reflection on thoughts, feelings, and internal states experienced during the session rather than in the details of the session such as distances, intensities, and times. Much like the self-generated security enhancing function of meditation (Wallin, 2007), keeping a training journal can activate the same type of bilateral brain integration that is fostered in reflective dialogues with an attachment figure and may also help to promote the development of an internalized secure base. Siegel (2010b) explained, "Writing in a journal activates the narrator function of our minds. Studies have suggested that simply writing down our account of a challenging experience can lower physiological reactivity and increase our sense of well-being" (p. 187). As

such, keeping a training journal is a self-generated process that may have parallels to the safe haven function of secure attachment.

Summary and Culmination: Resilience and Mental Toughness

Mental toughness is trainable. Mental toughness is reinforced by resilience, self-regulation, and vagal tone, all of which are associated with secure attachment. The literature on attachment and interpersonal neuroscience suggest that the distinctive traits of mental toughness can all be strengthened within the coach–athlete relationship. Attachment Based Coaching draws from research in the fields of attachment theory, interpersonal neuroscience, sport psychology, and my own experience as a coach and as an athlete. The findings suggest that Attachment Based Coaching may help coaches and athletes move toward greater attachment security and neural integration while also promoting the enhancement of athletic performance through improved self-awareness, self-regulation, response flexibility, resilience, and, ultimately, mental toughness.

Mental toughness has been characterized as having four key components: powerful and abiding self-confidence, deeply rooted internal motivation, the ability to maintain and sustain external and internal focus, and the capacity to perform with composure while under pressure (Jones et al., 2002). The Attachment Based Coaching model addresses each of these components. Self-confidence and motivation are both built with positive reinforcement, progressive skill development, and the establishment and achievement of intermediate and long-term goals. Performance-oriented focus is a function of a reduced vigilance for threat, down-regulation of the sympathetic nervous system, and strong vagal tone, all of which are bolstered by an internalized or an external secure base. Composure under pressure, like focus, depends upon one's ability to manage

arousal, to recover from dysregulating experiences, and to stay connected with the present moment in one's performance. These performance-oriented traits and states are trainable and may be strengthened inside of a coach–athlete relationship that is built upon trust, attunement, interactive regulation, and integration.

The development of self-awareness and self-regulation is integral to Attachment Based Coaching. Self-awareness and self-regulation are essential for resilience and mental toughness, and may be at the heart of a more balanced and connected life in sport and beyond. Attachment Based Coaching is a comprehensive approach to training athletes that is aimed at developing self-awareness, self-regulation, response flexibility, and resilience. In this way, along with developing the body, the practice of sport becomes a way to train the mind. Attachment Based Coaching, however, is also about more than mental toughness and performance enhancement. It is about how a life in sport can provide opportunities for coaches and athletes to make deep connections within themselves and with others. Ultimately, Attachment Based Coaching is about the integration of heart and soul in sport and, by extension, in all the arenas of one's life.

Chapter IV
Conclusion

Sport can be used to escape, avoid, cope, or anesthetize. However, when pursued with focus, attention, and purpose, the practice of sport can also be used to make contact and to go inward. Whether training alone or with a coach, sport can be an integrating and transformative force in one's life.

Summary

This thesis began with the question of whether the coach–athlete relationship might be viewed as a relationship of attachment within which an athlete's capacities for self-awareness, self-regulation, response flexibility, and resilience could be strengthened, and an athlete's models of attachment could be updated. There is a vacancy in the literature on attachment, sport psychology, and coaching with regard to this question. This thesis is an attempt to address that vacancy, to synthesize the work of scholars from a range of fields, and to offer something to researchers who follow.

Chapter II examined literature from the fields of attachment, neuroscience, parenting, couple therapy, sport psychology, coaching, and dog training. It drew connections between the research and pointed toward an attachment-based understanding of the coach–athlete relationship. Chapter II highlighted some of the key points in attachment theory and the evolution of the social brain. Chapter II also explored some of the neural structures associated with emotion, internal regulation, empathy, and memory. The effects of mindfulness, meditation, and the potential therapeutic effect of

relationships were described, as were their connections to the realms of sport and the coach–athlete relationship.

The findings described in Chapter III are a product of an analysis and distillation of the literature in Chapter II. The findings are also drawn from more than 15 years of my own experience as a high-performance coach and over three decades of my life in the devotion to sport. The findings will benefit from the work of future scholars, therapists, coaches, and athletes exploring, applying, and refining the concepts and approaches outlined in this thesis.

Based on the findings, I put forth a model called Attachment Based Coaching. Chapter III described an approach that I call emotional priming and provided Attachment Based Coaching perspectives on the familiar psychological skills training interventions of self-talk, relaxation, imagery, and goal setting. Chapter III also discussed the attachment-strengthening functions of present-centered awareness, meditation, and a focus on the breath in sport. Chapter III concluded with an exploration of the connection between attachment, resilience, integration, and mental toughness in sport.

Questions for Future Research

The scope of the research started here will benefit from further inquiry, study, and application. Coaches can begin to incorporate the approaches of Attachment Based Coaching and contribute from their own experience to the findings of this work. Researchers can conduct inquiries into whether brain processes such as myelination and structures such as the insula are affected by Attachment Based Coaching approaches and practices. Investigations into whether an attachment-based approach to coaching

improves attachment, resilience, mental toughness, and athletic performance all need to be conducted.

The very question of whether the enhancement of attachment security leads to the enhancement of athletic performance must also be tested. One way to begin testing this thesis is to conduct an Adult Attachment Interview (AAI) (Karen, 1994; Wallin, 2007) with a sample of high performing athletes and coaches. This would determine the baseline attachment orientation of high-performing athletes and coaches in the study; identify the types of attachment histories that high-performing athletes and coaches tend to have; and allow for a comparison of the attachment histories between coaches and athletes within coach–athlete dyads. Once this data is compiled, Attachment Based Coaching protocols can be introduced into the training of the dyads. After a period of time, attachment can be reassessed for the coaches and athletes in the sample. Those findings can be plotted against measures of athletic performance as well as satisfaction in sport and in life beyond sport.

Conclusions

The findings suggest that the coach–athlete relationship can be viewed as a relationship of attachment that fulfills the requirements of secure base, safe haven, and proximity. As such, I have presented a model called Attachment Based Coaching, which applies the principles of attachment theory and interpersonal neuroscience to the coach–athlete relationship in an effort to improve athlete self-awareness, self-regulation, response flexibility, and resilience. Such outcomes may enhance athletic performance, but perhaps more importantly, they may improve the qualities of coherence, balance, and integration in coaches' and athletes' lives.

The key points of an attachment-based approach for coaches include attunement, resonance, empathy, and contingent communication with athletes. Other key points include an understanding of the processes of neuroplasticity, attention, and myelination in training, as well as the value of coaching supervision, therapy, mentoring, and continuing education. Finally, an attachment-based approach for coaches highlights the importance of co-regulation, the development of vagal tone, and the powerful therapeutic potential of a consistent, caring relationship.

The research suggests that even without a coach, athletes may still have opportunities to gain many of the benefits associated with secure attachment. By engaging in meditation, keeping a journal, scanning the body, and attuning to the breath, athletes may develop many of the neural structures associated with secure attachment. Tools such as heart rate monitors, cadence computers, and power meters can also help an athlete to develop internal body awareness, whether the athlete is coached or not. Such internal awareness is a prime focus of development in the Attachment Based Coaching model.

The fields of attachment and interpersonal neuroscience share common ground with depth psychology. Each deals with unconscious dynamics and processes, particularly as they relate to the family of origin. The field of depth psychology is enriched by the work being done in the realms of attachment and interpersonal neuroscience. Likewise, the fields of attachment and interpersonal neuroscience can benefit from the perspectives of the depth psychology tradition.

Academic sport psychologists are encouraged to continue the research that has been started here. Clinical sport psychologists may also apply the findings in therapeutic

practice with athletes and coaches. In the domain of applied sport psychology, coaches may begin to implement the Attachment Based Coaching model in their daily work and relationships with athletes. Finally, therapists outside of sport can draw from the research in attachment and neuroscience that has been reviewed in this thesis and identify parallels from the findings in their own therapeutic practices. And perhaps, beyond the arenas of therapy and sport, the work in this thesis may help contribute to the qualities of balance, integration, and intimacy, in all relationships.

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Autobiographical Sketch

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