

THE RELATIONSHIP BETWEEN MENTAL TRAINING AND MOTIVATION IN  
COLLEGIATE ATHLETICS

A handwritten signature in cursive script, reading "Patricia Bromley". The signature is written in dark ink on a light-colored, slightly textured background.

Approved: \_\_\_\_\_ Date: 05-14-2009

THE RELATIONSHIP BETWEEN MENTAL TRAINING AND MOTIVATION IN  
COLLEGIATE ATHLETICS

---

A Seminar Paper

Presented to

The Graduate Faculty

University of Wisconsin-Platteville

---

In Partial Fulfillment of the

Requirement for the Degree

Masters of Science

in

Education

Adult Education

---

by

Jaclyn L. Salzwedel

2009

## Abstract

### “The Relationship between Mental Training and Motivation in Collegiate Athletics”

Jaclyn L. Salzwedel

Athletics is a serious matter, especially at the collegiate [elite] level. Coaches, athletes, athletic directors, athletic trainers and sports psychologists all collaboratively work to achieve the same goal: success. Peak performance of athletes comes as a result of many different factors including coaching, physical and mental training [mental toughness], motivation, knowledge of opponents, and dedication to program/team. Many of these factors have a relationship with each other. However, there is a vast lack of scholarly research examining the relationship between such factors. The topics of this paper are the importance of such studies, focusing on the relationship between mental training and motivation [extrinsic and intrinsic] in collegiate athletics.

## TABLE OF CONTENTS

APPROVAL PAGE.....	i
TITLE PAGE.....	ii
ABSTRACT.....	iii
TABLE OF CONTENTS.....	iv

CHAPTER	PAGE
I. INTRODUCTION.....	1
Introduction	
Statement of the Problem	
Definitions of Terms	
Delimitations	
Method of Approach	
II. REVIEW OF LITERATURE.....	3
History of Sports Psychology	
Mental Training	
Motivation	
Related Research	
III. CONCLUSIONS AND RECOMMENDATIONS.....	17
IV. REFERENCES.....	19

## CHAPTER 1

### INTRODUCTION

The motivational-psychological aspects of athletics are the most influential aspects of the game, especially at the collegiate level. The motivation factor is what winners have, and what everyone else desires. Everybody in the sport world has heard the phrase *mind over matter*. But how many coaches who have said the latter have actually have trained the minds of their athletes? The lack of mental training that takes place, even at the collegiate level, impacts the performance of their athletes and subsequently the teams' success.

It is obvious that at the collegiate level, mentally sound athletes have that extra motivation factor—which is the key ingredient to success. There have been a sufficient amount of studies conducted and articles written on the influence of mental training and the psychological-aspects of sports. However, there have not been studies conducted on the relationship between mental training and motivation.

#### Statement of the Problem

The problem to be addressed is, “What is the relationship between mental training and motivation in collegiate athletics?”

#### Definition of Terms

Sport and exercise psychology: The scientific study of people and their behaviors in sport and exercise contexts and the practical application of that knowledge (Gill, 2000).

Psychological skills training/mental training: Refers to systematic and consistent practice of mental of psychological skills, for the purpose of enhancing performance, increasing enjoyment, or achieving greater sport and physical activity self-satisfaction (Weinberg & Gould, 2007).

Motivation: The direction and intensity of one's effort (Weinberg & Gould, 2007).

Mental toughness: \*It is notable that there is no universal definition. The following definitions have been derived through studies attempting to define the construct and attributes of.

Once defined as 1). Having the natural or developed psychological edge that enables athletes to generally cope better than opponents with the many demands (competition, training, lifestyle) that sport places on a performer. Specifically, be more consistent and better than their opponents in remaining determined, focused, confident, and in control under pressure (Jones, Hanton, & Connaughton, 2002) and 2). The following definition of mental toughness emerged from Hoover's (2006) study: the ability to focus on a goal perform at a consistent, highly competitive level; react and make the play in a pressure situation; and maintain composure through adversity

#### Delimitations of the Research

The research was conducted in and through the Karrmann Library at the University of Wisconsin-Platteville, over eleven (11) months. Primary searches were conducted via the Internet through Wilson databases (education full text and humanities full text) and EBSCO host (ERIC and Academic Search Elite) as the primary sources. Google's Scholar search engine was also utilized. Key search topics included, "coaching and mental toughness", "mental training and motivation and collegiate athletics", "psychology and motivation and sports", and "psychology and motivation and athletes" and "athletes and motivation."

#### Method of Approach

A brief review of the history of sports psychology (1950s-present) was conducted. A review of literature relating to research, studies, and anecdotal evidence of mental training in collegiate athletics, and its impact on performance—as well as, motivation—was conducted. Another review of literature on related research was conducted. The findings were summarized and synthesized, and recommendations made.

## CHAPTER 2

### REVIEW OF RELATED LITERATURE

#### Sports Psychology

Sport and exercise psychology is the scientific study of people and their behaviors in sport and exercise contexts and the practical application of that knowledge (Gill, 2000). The development of sport and exercise psychology dates back to about the turn of the 20th century. Some (Weinberg & Gould, 2007) have considered the first North American sports psychologist to be a psychologist from Indiana University by the name of Norman Triplett. Dating back to the 1890s, Triplett was the first researcher to confirm that bicyclists sometimes rode faster when they raced in groups or pairs than when they rode alone. The history of sport psychology continued with Coleman Griffith's work in the 1920s and '30s on the psychology of coaching (Gardner & Moore, 2005). Furthermore, during the 1950s and '60s, sport psychology as a discipline was primarily found in departments of physical education and exercise science, and issues relating to motor learning and development dominated sport psychology research. Even 20 years ago the available research suggested that mental training programs were vital to sport performance (Harmison, 2006).

The field of sport psychology has come a long way since the early days of Norman Triplett. Modern-day sports psychologists may engage in several different roles including conducting research, teaching and consulting with athletes and exercisers. Not all sports psychologists are trained in the same way (Susic, 2007). According to Weinberg and Gould (2007):

Clinical sport and exercise psychologists are trained specifically in psychology to treat athletes and exercisers with severe emotional disorders, such as substance abuse or anorexia. Educational sport psychology specialists receive training in exercise and sport science and related fields and serve as mental coaches, educating athletes and exercisers about psychological skills and their development. They're not trained to assist people with severe emotional disorders. (p. 19)

Educational sport psychology specialists are most frequently associated with collegiate athletics. However, the goal for sport psychology practitioners is to help athletes achieve at optimal levels and to do so more consistently, also known as peak performance (Harmison, 2006). Harmison defines peak performance as the act of an athlete when they perform above their usual level (2006). Sport psychology has been at the forefront of the study and application of peak performance principals and practices (Dalloway, 2008).

### Motivation

Research dating back 30 years showed the need and desire for athletes to be urged and led by their coaches during their athletic efforts (Laios, Theodorakis & Gargalianos, 2003). Motivation is what coaches refer to as desire or drive (Dalloway, 2008). It is a key factor to high performance and a key factor in successful athletic competition. Motivation and motives are considered extremely important for athletes. Motivation is a general term applying to the entire class of drivers, desires, needs, wished, and similar forces (Laios et al., 2003). Motivation refers to the forces either within or external to a person that arouse enthusiasm and persistence to pursue a certain course of action (Laios et al., 2003). Both external motivation and internal motivation are important considerations in achieving athletic goals (Susic, 2007).



Intrinsic motivation is defined as the motivation to engage in an activity for its own sake, while extrinsic motivation is defined as motivation that is externally controlled (Roberts, Spink, & Pemberton, 1999). Examples of internal motivation factors include: the need for achievement, the definition of targets, success or failure, the fear of failure, and reinforcement. Examples of external motivation factors include: the coach, teaching, variety of exercises, the methods of training, competition, sports facilities, the spectators/parents, and rewards (Laios et al., 2003).

College athletes on athletic scholarships or grants may view themselves as performing for money, and subsequently display less intrinsic motivation than athletes not on scholarship. Typically, competitive success tends to increase intrinsic motivation, whereas competitive failure tends to decrease intrinsic motivation (Weinberg & Gould, 2007).

### Mental Training

The psychological aspects are often the most difficult obstacles that the collegiate athlete will have to overcome. Ironically, they are commonly the area most neglected—even at the collegiate level.

The mind-body connection is a very powerful one. For everything one thinks in the mind, the body has a reaction, regardless of whether it is real or imagined (Sugarman, 2007). Competition is tight, athletes are physically fit, and the margin for victory is slim. According to Sugarman (2007):

Managers, coaches and players are realizing that to get ahead they need an added resource, and that resource is a trained mind. When there are two teams that are physically equal, it is the team that works together smoothly and is mentally prepared and confident that will come out on top. However, no mental training will compensate for ineffective technique. Athletes need to be strong, technically and mentally. (p. 1)

Many coaches have progressed as far as they could in the physical aspects of training and are now coming to grips with and beginning to make steady headway in the mental aspects. Coaches desire a mentally tough athlete; mental toughness plays a crucial role in clutch situations (Best, 1999).

According to Creasey, Stratton, Maina, Rearick and Reincke (2008), the formal definition of mental toughness was described as an athlete having the natural or developed psychological edge that enables them to generally cope better than their opponents with the many demands (competition, training, lifestyle) that sport places on a performer; specifically be more consistent and better than their opponents in remaining determined, focused, confident, and in control under pressure. Mental training toughness is achieved through mental training.

Since NCAA rules prohibit coaches from practicing more than 20 hours per week with their athletes, many do not take the time to develop mental training programs. But mental training does not have to be time consuming; a number of activities can be incorporated with regular practice activities (Creasey et al., 2008). For instance, Dwyer (2007) listed the following psychological techniques used in sport psychology: positive thinking, hypnosis, mental practice, meditation, competence training, relaxation, affective control, cognitive behavioral techniques, autogenic training and biofeedback, visual motor behavioral rehearsal, attention control training, and religion.

Howland (2007) described the practical application of mental skills through use of cognitive techniques that included: self-talk, relaxation, visualization, and goal-setting. Howland found that something as simple as self-talk served two primary functions for athletes, a cognitive function and a motivational function.

According to Harmison, the consistent use of mental training skills and strategies, such as goal-setting, imagery, and performance routines, allows athletes to prepare themselves mentally to perform, putting themselves in a psychological position to be successful (2006). Harmison also noted the importance of mental training because it provides means by which athletes cope with all types of stressors that may prevent or interrupt an ideal performance state (2006). Examples of such stressors include injury, travel demands, and expectations of others.

Athletes who demonstrate peak performance in sports follow a set of mental processes that allow them to produce excellent results consistently (Dalloway, 2008). To perform at a level that matches their potential, athletes need to understand their mental strengths and weaknesses. Consistency in performance, rate of athletic development, and the joy and sense of achievement from athletic performance and competition are enhanced by awareness of mental strengths and weaknesses. The use of mental training skills serve as powerful techniques in reaching a high level of mental toughness (Lefkowitz & McDuff, 2002).

#### Related Research

Mental toughness is probably one of the most used but least understood terms used by sporting communities globally (Gordon, 2005). According to the existing literature regarding collegiate athletics' relationship with mental training and motivation have been most commonly associated with the concept of mental training and/or mental toughness (Creasy et al., 2008; Fourie & Potgieter, 2001; Giacobbi, Peter, Roper, Whitney, & Butryn, 2002; Gordon, 2005; Gould, Dieffenbach, & Moffett, 2002; Hoover, 2006; Jones, Hanton, & Connaughton, 2002; Loehr, 1982; Middleton, Marsh, Martin, Richards, & Perry 2004a, b, c).

Dating back 27 years, Loehr (1982) was arguably one of the first to popularize the term when he contended that at least 50 percent of superior athletic performance could be attributable

to mental factors. However, much of the groundwork of the concept of mental toughness took place in 2002.

The foundation of the existing literature on mental toughness dates back seven years to the study conducted by researchers Jones, Hanton, and Connaughton (2002). Ten international performers participated in focus groups or one-on-one interviews from which the definition and attributes of mental toughness emerged. Jones et al. (2002) defined mental toughness as having the natural or developed psychological edge that enables athletes to generally cope better than opponents with the many demands (competition, training, lifestyle) that sport places on a performer. Specifically, the purpose is to be more consistent and better than their opponents in remaining determined, focused, confident, and in control under pressure (2002). As a result of the qualitative study, a list of 12 attributes of the ideal mentally tough performer emerged:

Having an unshakable self-belief in their ability to achieve competition goals; Bouncing back from performance set-backs as a result of increased determination to succeed; having an unshakable self-belief that they possess unique qualities and abilities that make them better than their opponents; having an insatiable desire and internalized motives to succeed; remaining fully focused on the task at hand in the face of competition specific distractions; regaining psychological control following unexpected, uncontrollable events; pushing back the boundaries of physical and emotional pain, while still maintaining technique and effort under distress in training and competition; accepting that competition anxiety is inevitable and knowing that you can cope with it; not being adversely affected by others' good and bad performances; thriving on the pressure of competition; remaining fully-focused in the face of personal life distractions; switching a sport focused on/off as required. (pg. 209)

Implications of the research suggested were twofold. First, there is considerable value in talent development searches for athletes with these characteristics with a view to competency profiling instrument comprising these characteristic could be related to identify specific psychological skills training needs for improvement. Second, competence profiling instruments comprising these characteristics could be created to identify specific psychological skills training needs for improvement (Jones et al., 2002).

The latest sample of such related research was published in 2008 by a team of five researchers (Creasy et al., 2008). The four page article was a scholarly review of the existing literature (universal definitions, scientific research, statistics, measuring instruments and models) and lack thereof on the concept of mental toughness in elite athletics:

There is an obvious need for definition, intervention in, and evaluation of the construct. Before coaches can observe mentally tough attributes in their players, they must establish a definition of the attributes that makes up the term. Only then will the coach be able to produce an instrument that will help him [or her] recognize the mental strengths and weaknesses of their athletes and to design their training programs to fit the needs of their individual athletes and teams. A canned comprehensive approach is unlikely to develop the mental training skills necessary for the most productive performances. Mental toughness must be considered a crucial element of the practice and training activities. While many coaches use the phrase and acknowledge the importance of mental toughness, few attempts have been made to define or develop it. (pg. 30)

However, prior to Creasy and colleagues' 2008 publication, existing literature attempted to define the term mental toughness; subsequently, the recommendation of further research on this critical aspect of elite athletics inevitably surfaced.

Fourie and Potgieter (2001) pioneered the qualitative study of mental toughness. Content analysis of written responses from 131 expert coaches and 160 athletes yielded 12 characteristics of the term: motivation level, coping skills, confidence maintenance, cognitive skill, discipline and goal directedness, competitiveness, possession of prerequisite physical and mental requirements, team unity, preparation skills, psychological hardiness, and ethics.

Researchers Gould, Dieffenbach, and Moffett (2002) endeavored to define the term mental toughness by researching the psychological characteristics, and their development, of Olympic champions as. Interview data and questionnaire were both used from 10 Olympic champions (who have won 32 Olympic medals collectively), their coaches, parents/guardians and/or significant others. The following definition, similar to that of the Jones et al. (2002) definition, emerged as a result of the study:

Mental toughness is having the natural or developed psychological edge that enables athletes to generally cope better than opponents with the many demands (competition, training, and lifestyle) that sport places on a performer; specifically, be more consistent and better than opponents in remaining determined, focused, confident, and in control under pressure. (pg. 209)

Investigations revealed that the athletes were characterized by: the ability to cope with and control anxiety; confidence; sport intelligence; the ability to set and achieve goals; coachability; high levels of dispositional hope; optimism; adaptive perfectionisms, and, mental toughness/resilience. Although the definition encompassed the essence of the phrase mental toughness, Jones emphasized that more research be done to better understand the concept and its crucial components, as well as its substantial role in sport performance (2002).

Hoover (2006) conducted interviews with coaches and student-athletes from a variety of athletic programs at Marietta College, a NCAA Division III Institute in Southeastern Ohio. The purpose of the study was to explore athletes' and coaches' views and attitudes about mental toughness. The following definition that emerged as a result of the investigation: Mental toughness is the ability to focus on a goal, perform at a consistent, highly competitive level, react and make the play in a pressure situation, and maintain composure through adversity.

The following definition of mental toughness emerged from Hoover's (2006) study: the ability to focus on a goal perform at a consistent, highly competitive level; react and make the play in a pressure situation; and maintain composure through adversity. Hoover's findings, although stated differently, is similar to the Jones (2002) definition and conveys the same general consensus on what constitutes a mentally tough performer: confidence, emotional consistency, discipline, hard work, focus, strength/toughness, and the ability to lead. Confidence was the characteristic cited most by subjects when asked to identify characteristics of a mentally tough performer: Many of the athletes pointed out that having that certainty in their ability to compete and make the big play is probably the most important part of being mentally tough. Some athletes said that it helps when they know that their coach has confidence in them and their ability. Coaches stated that their most mentally tough athletes are those who exude confidence and do not fear failure in all parts of their lives, not just athletics.

It was also noted that the characteristics are not independent of each other. A mentally tough performer will not possess only a few of these characteristics; the more of the characteristics possessed by an athlete, the more mentally tough that person is likely to be. It was highlighted that with more research it appears that a concrete definition of this concept could be agreed upon (Hoover, 2006).

The three other characteristics cited in the study were emotional consistency, discipline and hard work. Athletes at all levels try to find a balance among their many responsibilities and at times feel overwhelmed. Subjects felt that those athletes who maintain balance and find ways of putting in extra time, through discipline, to work on their game and athletic goals are deemed mentally tough athletes (Hoover, 2006). Hoover emphasized that although existing literature has supported the theme that mental toughness can be learned, there is little research-based evidence supporting the assertion. Hoover's study supported two themes: 1). mental toughness can be developed and 2). mental toughness must preexist, and only if it does, then can it be enhanced. The findings yielded the notion that there had to be some sort of foundation already in place. Existing literature has supported the first theme, that mental toughness can be developed; however, there is little research-based evidence supporting this topic. Hoover (2006) noted that the Jones (2002) definition was in support of both themes.

Hoover's research questions (2006) yielded responses that were classified in two categories: 1). Factors that contribute to the development of mental toughness; factors that occur without the actual intention of developing mental toughness. (e.g., experience in athletes, interaction with experienced teammates, role models, home environment or upbringing) and 2). Strategies that can develop or enhance mental toughness; actual ways coaches can develop this concept in athletes (e.g., pushing athletes to their physical limits, including pressure situations in practice, conditioning talking about mental toughness and making it an expectation, having athletes read literature and gain awareness about this concept, and repetition of skills in practice). The research supported that mental toughness is a concept that may naturally occur in athletes or can also be developed.



In Australia, Middleton, Marsh, Martin, Richards, and Perry (2004a, b, c) presented a new definition of mental toughness, plus developed a Mental Toughness Inventory (MTI) and a model of mental toughness that is both multi-dimensional and hierarchical. Middleton et al. (2004a) asserted that the definition from the Jones et al. (2002) study was inadequate. Researchers emphasized the inadequateness of the definition by noting it described the outcomes of being mentally tough, but it did not define mental toughness itself. Their qualitative research with 33 participants (25 elite athletes and eight non-athletes with extensive elite level sport experience as either sport scientist, coach, psychologist or management) concluded that mental toughness is defined as: An unshakable perseverance and conviction towards some goal despite pressure or adversity (Middleton et al., 2004a).

Middleton et al. (2004a) identified 12 mental toughness characteristics: self-efficacy, mental self-concept, potential, task-specific attention, perseverance, task familiarity, personal bests, task value, goal commitment, positivity, stress minimization, and positive comparisons. Researchers contended that their definition states as well as identifies the actions of mental toughness (e.g., emotion management, perseverance, task focus) as well as the role of some factors that orient individuals to be mentally tough (e.g., self-belief, determination commitment, attitude and task familiarity). Based on their qualitative research with 33 participants (25 elite athletes and eight non-athletes with extensive elite level sport experience as either sports scientist, coach, psychologist or management) they concluded that mental toughness was better defined as an unshakable perseverance and conviction towards some goal despite pressure or adversity." Additionally, Middleton et al. (2004a) developed a model of mental toughness that seems to capture the complexity of the concept with considerable specificity.

Gould, Ellund, and Jackson (1993) studied the coping strategies used by 20 members of the 1988 US Olympic wrestling team. Findings revealed that the difference between the medal winning and non-medal winning wrestlers was that the medalists' coping strategies were more internalized and automatized than the strategies of the non-medalists. This finding was significant in that it distinguished between successful and unsuccessful athletes whose levels of achievement were related to the development of psychological skills.

Once again, those skills and attributes found in the more successful athletes contribute to the definition of mental toughness. The phrase mental toughness still lacks a universal working definition, through several sports psychologists have attempted to distinguish the construct and the characteristics that are essential in becoming a mentally tough athlete (Gould, Ellund, & Jackson, 1993).

The studies described above contribute to a definition of mental toughness in athletes. Athletes are ill-equipped to handle the stress of burnout. Such studies include, the relationship between motivation and burnout (Cresswell & Eklund, 2005). Burnout manifests in athletes as a result of emotional and physical fatigue; mental fatigue, mental exhaustion, and overtraining are commonly associated with burnout in athletes (Porter, 2003). Researchers found that the characteristics of burnout were negatively associated with intrinsic motivation and positively associated with less self-determined forms of motivation. Intrinsically motivated engagements were regarded as the most self-determined.

Lefkowitz and McDuff (2002) examined the relationship between mental training and emotions. Researchers found that by being mentally tough, athletes can bring all of their talent and skill to life consistently. Furthermore, the ability of an athlete to use their emotional life effectively and be in control of their emotions while performing will help athletes perform at

their prime more consistently. The four emotional markers that athletes should be aware of and strive to improve upon, include: emotional flexibility, emotional responsiveness, emotional strength, and emotional resiliency. These emotional markers can be learned as can all of the other mental skills techniques.

Researchers of the next study actually took the concept of mental skills training to the classroom. The relationship between mental skills training courses and collegiate athletic performance was examined ("Psychological skills boost", 2003) in a NCAA Division 1 study from 1996-1999. Statistics indicated that college athletes perform better in their sports when they take a class to sharpen their mental skills. The class inquisition was a sophomore level course that consisted of learning mental strategies, such as goal-setting, controlling responses to pregame stress and excitement, and pregame rituals. Coaches reported that the study group achieved more in their sports, played with more confidence, peaked better under pressure, and coped better with adversity.

As noted in chapter two, researchers have established motivation and mental training as part of the peak performance formula in athletics (Harmison, 2006). In the field of sports and training, motivation is considered a very important tool for the improvement of the athlete as well as the team's performance (Laios et al., 2003). Athletes can benefit from developing the necessary psychological skills and strategies to achieve and maintain this mental and motivational state for peak performance (Harmison, 2006). Harmison often describes mental training and motivation intermittent, and places equal emphasis on both components. Both mental training and motivation can be found in the same textbooks. However, they are commonly found under two different chapters, as in Wienberg and Gould's (2007), *Foundations of Sport and Exercise Psychology*. But what about the relationship(s) that the two variables have

on each other? It is strongly recommended that further research be done on this crucial aspect of elite athletics.

## CHAPTER 3

### CONCLUSIONS AND RECOMMENDATIONS

In summary, this paper was initially intended to yield the relationship between mental training and motivation in collegiate [elite] athletics, and prompt the recommendation of further research on the topic. The existing literature on the topics of mental training and motivation in elite athletics subsequently boiled down to the concept of mental toughness. Research efforts changed direction upon the discovery of the need for an universal definition of mental toughness and the attributes of mentally tough athletes.

This paper examined existing literature on the topic(s) of mental training [toughness] and motivation in collegiate [elite] athletics. The conclusion of such research comes down to the recommendation for further research on the concept of mental toughness, mental training, and their relationship(s) with motivation, and on the noted attributes of the concept.

It is recommended that further research be conducted in the field of the psychological-motivational aspects of athletics. Further research is needed specifically on the relationship between mental training and motivation in collegiate [elite] athletics. Athletics is a serious matter, especially at the collegiate level. Mental toughness is vital to the success of athletes and teams around the world. Coaches, athletes, athletic directors, athletic trainers and sports psychologists all collaboratively work to achieve the same goal: success. Peak performance of athletes comes as a result of many different factors including coaching, physical and mental training, motivation, knowledge of opponents, and dedication to program/team. Many of these factors have a relationship with each other. However, there is a vast lack of scholarly research examining the relationship between such factors. The topics of this paper are the importance of such studies, focusing on the relationship between mental training and motivation (extrinsic and

intrinsic) in collegiate athletics. There are still questions that are in need of answering on this vital topic. For instance, the questions of the attributes of mentally tough athletes at the collegiate [elite] level still exists. Additionally, the biggest question that still remains is the universal definition of mental toughness. Until this definition is unanimously and universally defined, there can be no significant research on the relationship of such attributes.

In summary, it is recommended that future researchers, applied sports psychologists, and coaches work in unison to observe and examine the behaviors and traits of highly motivated athletes and the affect that mental training [toughness] has on their performance, and motivational levels. Although the time and energy required to complete such complex, multi-method designs would be considerable, the dividends could greatly enhance the understanding of the impact of mental training on motivation in collegiate athletics.

## References

- Best, D. (1999). Visualization: The mental road to accomplishment. *Coach and Athletic Director*, 69(1), 44-46.
- Creasy, J. W., Stratton, R. K., Maina, M. P., Rearick, M. P., & Reincke, K. (2008). Mental toughness in sports. *Coach and Athletic Director*, 77(9), 30, 32, 34.
- Cresswell, S. L., & Eklund, R. C. (2005). Changes in athlete burnout and motivation over a 12-week league tournament. *Medicine and Science in Sports and Exercise*, 37(11), 1957-1966.
- Dalloway, M., (2008). Peak performance information. Retrieved June 20, 2008, from <http://www.performance-media.com/peakqualities.php>
- Dwyer, J. M., (1992). Review of the psychology of sport: The behavior, motivation, personality and performance of athletes, 2nd edition. *Canadian Psychology/Psychologie Canadienne*, 33(4), 739-741.
- Fourie, S., & Potgieter, J. R. (2001). The nature of mental toughness in sport. *South African Journal for Research in Sport, Physical Education and Recreation*, 23, 63-72.
- Gardner, F., & Moore, Z. (2005). *Clinical sport psychology*. Champaign, IL: Human Kinetics Publishers, Inc.
- Giacobbi, J., Peter, R., Roper, E., Whitney, J., & Butryn, T. (2002). College coaches' views of successful athletes: A descriptive exploratory investigation. *Journal of Sport Behavior*, 25(2), 164-180.
- Gill, D. (2000). *Psychological dynamics of sport and exercise* (2<sup>nd</sup> ed.). Champaign, IL: Human Kinetics Publishers, Inc.

- Gordon, S., (2005). *Identification and development of mental toughness*. Dissertation University of Western Australia.
- Gould, D., Dieffenbach, K., & Moffett, A. (2002). Psychological characteristics and their development in Olympic champions:, *Journal of Applied Sport* (14)3, 172-204.
- Gould, D., Eklund, R.C., & JACKSON, S.A. (1993a). 1988 USA Olympic Wrestling Excellence: Coping strategies used by U.S. Olympic Wrestlers. *Research Quarterly*, 64 (1), 83-93.
- Harmison, R. (2006). Peak performance in sport: Identifying ideal performance states and developing athletes' psychological skills. *Professional Psychology: Research & Practice*, 37(3), 233-243.
- Hoover, A. (2006). *Keys to athletic success: A study of student athletes' and coaches' views on mental toughness*. Dissertation Marietta College.
- Howland, J. (2007). Mental skills training for coaches to help athletes focus their attention, manage arousal, and improve performance in sport. *Journal of Education*, 187(1).
- Jones, G., Hanton, S., Connaughton, D. (2002). What is this thing called mental toughness? An investigation of 10 elite performers. *Journal of Applied Sport Psychology*, 14,(3), 205-218.
- Laios, A., Theodorakis, N., & Gargalianos, D. (2003). The importance of internal and external motivation factors in physical education and sport. *International Journal of Physical Education*, 40(1), 21-26.
- Lefkowitz, J., & McDuff, D. R. (2002). Mental toughness training manual for baseball/softball players. Retrieved June 18, 2008, from <http://www.mdsports.net/docs/mentalskillsbaseball.pdf>



- Loehr, J. E. (1982). *Athletic excellence: Mental toughness training for sports*. New York: Forum.
- Middleton, S.C., Marsh, H.M., Martian, A.J., Richards, G.E., & Perry, C. (2004a). Discovering mental toughness: A qualitative study of the mental toughness in elite athletes. *Self Research Centre Biannual Conference, Berlin*.
- Middleton, S.C., Marsh, H.M., Martian, A.J., Richards, G.E., & Perry, C. (2004b). Mental toughness: Is the mental toughness test enough? *International Journal of Sport & Exercise Science*.
- Middleton, S.C., Marsh, H.M., Martian, A.J., Richards, G.E., & Perry, C. (2004c). Developing the Mental Toughness Inventory (MTI). *Self Research Centre Biannual Conference, Berlin*.
- Porter, K. (2003). *The mental athlete*. Champaign, IL: Human Kinetics Publishers, Inc.
- Psychological skills boost sports performance. (2003). *Physician & Sportsmedicine*, 31(12), 16-17.
- Roberts, G. C., Spink, K.S., & Pemberton, C.L. (1999). *Learning Experiences in Sport Psychology: A Practical Guide to Help Students Understand the Major Concepts in Sport Psychology* (2nd ed.). Champaign, IL: Human Kinetics Publishers, Inc.
- Sugarman, K. (2007). *Why mental training?* Retrieved March 10, 2008, from <http://www.psychwww.com/sports/mt.htm>
- Susic, P. (2007) *Sports psychologists and the history of sports psychology*. Retrieved July 15, 2008, from [http://www.psychtreatment.com/sport\\_psychologists.htm](http://www.psychtreatment.com/sport_psychologists.htm)
- Wienberg, R., & Gould, D. (2007). *Foundations of sport and exercise psychology* (4<sup>th</sup> ed.). Champaign, IL: Human Kinetics Publishers, Inc.