

**INFLUENCE OF MENTAL TOUGHNESS AS CORRELATES OF ATHLETIC  
PERFORMANCE AMONG STUDENT ATHLETES IN THE UNIVERSITY OF BENIN**

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**UNIVERSITY OF BENIN**

**BENIN CITY**

**NOVEMBER, 2023**

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**RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF HUMAN  
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## CERTIFICATION

We the undersigned certify that this project was carried out by Ogheneforo **MARIOGHAE**, of the Department of Human Kinetics and Sports Science, Faculty of Education, University of Benin, Benin City, in partial fulfillment of the requirements for the award of B.Sc. (Ed.) in Human Kinetics and Sports Science.



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## **DEDICATION**

Dedicated to God Almighty the Alpha and the Omega, the Beginning and the End, the First and the Last.

## AKNOWLEDGMENTS

The researcher wishes to express his profound gratitude to God Almighty for the gift of life and sustenance through the duration of my study. My sincere gratitude goes to my project supervisor Dr. A.U. Oriakhi for guiding and approving this research work at all stages, his sage advice, insightful criticisms and encouragement aided the writing of the project in innumerable ways.

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## ABSTRACT

*This study investigated the influence of mental toughness as correlates of athletic performance among student athletes in the University of Benin, Benin City.*

*The study adopted a correlation research design. Four research questions were raised and four hypotheses were formulated. The population for this study consisted 243 student-athletes currently enrolled at the University of Benin. The sample size of this study is 121 student athletes. The multiple sampling procedure was used to select student athletes.*

*The research instrument for the study was a structured questionnaire made up of two sections, section A and section B. To establish the validity of the instrument, it underwent a rigorous review process by experts in the field of sports psychology in the department of human kinetics and sports science of the University of Benin*

*. Pearson product moment correlation coefficient was used with multiple regression analysis to analyze the hypotheses tested at 0.05 level of significance.*

*The findings of this research revealed that athletes with higher mental toughness tend to better than others with lower mental toughness. Concentration was also found to improve sports performance among student athletes of the University of Benin. Athletes who are self confident in their skills and abilities tend to perform better than others who do not possess self confidence. Mental toughness was also found to increase sports performance irrespective of gender.*

*In conclusion, this research has provided valuable insights into the relationship between mental toughness and athletic performance among student athletes of the University of Benin. The results support the idea that enhancing mental toughness can lead to improved sports*

*performance. Concentration and self- confidence were also found to be critical factors in the performance of student athletes. The research design, which employed a correlation approach, allowed for the examination of these relationships.*

*Recommendations were made for coaches, athletes, and sports authorities that mental toughness training should be incorporated into the regular training programme of student athletes. These programs can help athletes develop the mental skills required to enhance their performance. Concentration and Self-Confidence Workshops should be provided to athletes with opportunities to attend workshops and psychology sessions focusing on concentration and self-confidence. These sessions can assist in strengthening these crucial aspects of mental toughness. Future research can explore additional psychological factors and their impact on athletic performance. Such as motivation, resilience and emotional control, investigating the effectiveness of various mental toughness training methods would also be beneficial.*

## CHAPTER ONE

### INTRODUCTION

#### **Background of the study**

In the realm of competitive sports, achieving peak performance requires not only physical prowess but also mental strength. Mental toughness is a psychological construct that plays a pivotal role in athletes' ability to excel and perform consistently at high levels. It encompasses a range of psychological qualities and attributes that enable athletes to overcome challenges, handle pressure, and maintain focus, ultimately influencing their overall athletic performance under pressure.

Mental toughness can be described as the capacity to persevere, remain focused, and thrive in the face of adversity (Clough et al., 2002). It involves psychological resilience, self-belief, motivation, concentration, and the ability to manage emotions effectively. Athletes with high levels of mental toughness are better equipped to handle setbacks, cope with pressure, and maintain a positive mindset, leading to improved performance outcomes. Mental toughness can be also be defined as a psychological construct encompassing a set of attributes and qualities that enable individuals to thrive, persevere, and excel in the face of challenges, adversity, and high-pressure situations (Jones et al., 2002). Mental toughness empowers individuals to push through obstacles, embrace discomfort, and consistently perform at a high level. In simpler words, Mental toughness refers to the ability to stay focused, motivated, and resilient in challenging situations, enabling individuals to perform at their best (Crust, 2007).

Mental toughness is a critical factor in sports and performance, enabling athletes to overcome challenges, handle pressure, and excel in demanding situations. In the context of sports, mental toughness encompasses several components that contribute to an athlete's ability to thrive and achieve optimal performance. These components, including resilience, self-confidence, motivation, focus, determination, and emotional control, play a vital role in shaping an athlete's mental toughness."

Resilience stands as a fundamental pillar of mental toughness. It refers to an athlete's ability to rebound from failures, setbacks, and injuries. Resilient athletes perceive challenges as opportunities for growth, display adaptability, and maintain a positive attitude in the face of adversity (Fletcher & Sarkar, 2012). Resilience is not a fixed trait but a dynamic quality that encompasses several key elements such as; coping with Stress, adaptability, positive mindset, self confidence, performance enhancement and emotional regulation.

Athletes with strong mental toughness possess the ability to maintain concentration, block out distractions, and remain fully engaged in the present moment during both training and competition. This heightened focus contributes to better decision-making, anticipation, and execution of skills (Jones et al., 2007).

Emotional control is a vital component of mental toughness and plays a significant role in an athlete's ability to perform at their best. It refers to the capacity to manage and regulate one's emotions effectively in order to optimize performance and cope with pressure situations (Gucciardi et al., 2009). Athletes with strong emotional control can recognize and channel their emotions in a constructive manner, allowing them to perform at their peak even in high-pressure and challenging circumstances.

Exploring the correlates of mental toughness among student-athletes at the University of Benin holds great significance for their athletic and personal development. By understanding the factors that contribute to mental toughness, coaches, trainers, and educators can design interventions and programs to foster its growth among student-athletes. Developing mental toughness can enhance their ability to handle the unique challenges they face, such as balancing academics and sports, managing time effectively, and coping with performance pressures. Ultimately, promoting mental toughness can positively impact student-athletes' athletic achievements, overall well-being, and future success.

Numerous studies have highlighted the positive relationships between mental toughness and athletic performance among athletes in different sports. For instance, in a study by Connaughton et al. (2010), elite track and field athletes with higher levels of mental toughness demonstrated superior performance outcomes, such as faster running times and greater overall success in competitions. Similar findings have been reported in research focusing on team sports. In a study conducted by Thelwell et al. (2005) among professional football players, those with higher levels of mental toughness exhibited better performance indicators, including scoring more goals, providing more assists, and displaying superior teamwork skills.

Moreover, studies have also explored the impact of mental toughness on endurance sports. In research conducted by Gucciardi et al. (2008) among long-distance runners, mental toughness was positively associated with better race performance, higher self-efficacy, and greater resilience to fatigue and discomfort. Similar patterns were observed in studies investigating

mental toughness in other endurance-based sports, such as cycling and triathlon (Horsburgh et al., 2009; Sarkar & Fletcher, 2014). Furthermore, research has shown that mental toughness is not confined to individual or team sports but is also relevant in combat and martial arts. For example, a study by Sarkar et al. (2015) revealed that martial arts practitioners with higher levels of mental toughness demonstrated superior performance outcomes, such as more victories and successful strategies during combat competitions. These findings indicate that mental toughness plays a critical role in diverse athletic contexts, influencing performance outcomes across various sports domains.

The positive relationships between mental toughness and athletic performance can be attributed to several factors. Athletes with higher levels of mental toughness often exhibit greater resilience, enabling them to bounce back from setbacks and persevere through challenging situations (Gucciardi et al., 2015). Additionally, high levels of self-confidence and motivation contribute to enhanced goal-setting, increased effort and persistence, and ultimately, improved performance (Crust, 2008; Weinberg & Gould, 2015). The ability to maintain focus, concentration, and emotional control allows athletes to effectively manage pressure, make optimal decisions, and execute skills with precision (Gucciardi et al., 2009; Ntoumanis et al., 2020).

While previous studies have established positive relationships between mental toughness and athletic performance, limited research has focused on understanding these associations among student athletes at the University of Benin. Therefore, this study aims to fill this research gap and examine the specific correlates of mental toughness and their impact on performance outcomes within this population.

## **Statement of the Problem**

Despite the growing recognition of mental toughness as a crucial factor in athletic performance, there is a need for further investigation into its components and their impact on performance outcomes among student athletes. While previous research has examined mental toughness in various contexts, limited studies have specifically explored its correlates in the athletic performance of student athletes at the University of Benin. Therefore, there is a gap in the existing literature regarding the understanding of mental toughness and its influence on performance in this specific population.

## **Research Questions**

To address the research aim and fill the research gap, this study will seek answers to the following research questions:

1. What is the relationship between mental toughness and sports performance of students' athletes of the University of Benin?
2. What is the relationship between concentration and sports performance of students' athletes of the University of Benin?
3. What is the relationship between self-confidence and sports performance of students' athletes of the University of Benin?

4. What is the relationship between mental toughness and sports performance of students athletes of the University of Benin based on gender?

### **Hypothesis**

The following hypotheses were formulated and will be tested at 0.05 level of significance.

1. There will be no significant relationship between mental toughness and sports performance of students' athletes of the University of Benin.
2. There will be no significant relationship between concentration and sports performance of students' athletes of the University of Benin.
3. There will be no significant relationship between self-confidence and sports performance of students' athletes of the University of Benin.
4. There will be no significant relationship between mental toughness and sports performance of students athletes of the University of Benin based on gender.

### **Purpose of the study**

The purpose of this study is to find out the influence of mental toughness as correlates of athletic performance among students athletes of the University of Benin. The specific objectives of the study are to determine:

- The relationship between mental toughness and sports performance among student athletes of the University of Benin.

- The relationship between concentration and sports performance among student athletes of the University of Benin.
- The relationship between self-confidence and sports performance among student athletes of the University of Benin.
- The relationship between mental toughness and sports performance based on gender among student athletes of the University of Benin.

### **Significance of the study**

This study holds significant importance in advancing the field of sports psychology. By exploring the relationship between mental toughness and athletic performance among student athletes at the University of Benin, it contributes to the existing body of knowledge on the psychological factors that influence sports performance. The findings of this study can provide valuable insights into the role of mental toughness and its components in optimizing athletic performance, thereby enhancing our understanding of the psychological mechanisms underlying sports achievement.

The study aims to inform the development of targeted interventions and training programs. By identifying the specific components of mental toughness that significantly influence athletic performance, coaches, trainers, and sports psychologists can design interventions that focus on enhancing these components. This can lead to more effective and

tailored strategies for developing mental toughness among student athletes, thereby optimizing their performance potential and overall well-being.

Mental toughness plays a critical role in enabling athletes to overcome challenges, cope with pressure, and maintain consistent performance. By gaining a deeper understanding of mental toughness and its relationship to athletic performance, this study can equip student athletes at the University of Benin with valuable tools and strategies to enhance their competitive edge. The findings can help athletes cultivate resilience, self-confidence, motivation, focus, concentration, and emotional control, which are vital for achieving peak performance and sustained success in their respective sports disciplines.

The findings of this study can have practical implications for coaches, trainers, and sports administrators. Understanding the correlations between mental toughness and athletic performance can assist coaches in tailoring their coaching approaches and strategies to foster the development of mental toughness in their athletes. It can also guide the design of training programs that specifically target the enhancement of mental toughness components. This knowledge can lead to more effective coaching practices, improved training regimens, and better support systems to nurture mental toughness and optimize performance outcomes among student athletes.

In addition to performance outcomes, mental toughness is also associated with psychological well-being and resilience in the face of challenges. By focusing on mental toughness among student athletes, this study acknowledges the holistic nature of athletic development and seeks to promote the overall well-being of athletes. By developing mental toughness, student athletes can better manage stress, setbacks, and demands associated with their

athletic pursuits, leading to improved mental health and a more positive overall sporting experience.

The study extends to the University of Benin's sports program. The findings can provide valuable insights and recommendations for enhancing the support structures, coaching practices, and overall athletic development within the university. The study's outcomes can inform the design of policies, interventions, and resources that cater to the specific needs of student athletes, ultimately enhancing their sporting experiences and contributing to the growth and success of University of Benin's sports program.

### **Scope and Delimitation of the Study**

This study will be delimited to student athletes of the University of Benin. The scope will involve mental toughness, self-confidence, motivation, concentration, and emotional control.

### **Definition of Terms**

This section provides definitions of key terms used in the study to ensure clarity and common understanding.

- **Mental Toughness:** In this study, mental toughness refers to the psychological attribute and capacity of individuals, specifically student athletes, to effectively cope with stressors, challenges, setbacks, and pressure in the context of sports. It encompasses various components,

including resilience, self-confidence, motivation, focus, concentration, and emotional control (Jones et al., 2002; Gucciardi et al., 2017).

- **Resilience:** Resilience refers to an individual's ability to bounce back from adversity, recover from setbacks, and adapt to challenging circumstances. It involves the capacity to maintain a positive mindset, manage stress, and persist in the face of obstacles (Fletcher & Sarkar, 2013).
- **Self-confidence:** Self-confidence refers to an individual's belief in their own abilities, skills, and competence to successfully perform tasks and achieve desired outcomes in their sports pursuits. It involves having a positive self-perception and a sense of self-assurance (Vealey, 2001).
- **Concentration:** Concentration refers to the mental state of complete engagement and undivided attention towards a specific task or performance. It involves sustained focus and the ability to block out irrelevant stimuli or thoughts (Memmert, 2002).
- **Emotional Control:** Emotional control refers to the regulation and management of emotions during sports performance. It involves the ability to recognize, understand, and effectively manage one's emotions, preventing them from negatively impacting performance (Hanin, 2000).
- **Student Athletes:** Student athletes are individuals who are actively involved in both academic pursuits and competitive sports activities within an educational institution, such as the University of Benin, where they are enrolled as students and participate in organized sports programs.



## CHAPTER 2

### Review of Related Literature

Mental toughness (MT) is identified as an important psychological resource to overcome challenging and difficult circumstances. It is defined as the ability or a natural/developmental psychological attribute that enables athletes to cope better than their opponents do with many demands in life or sports and to be more consistent and outperform their rivals under pressure while remaining determined, focused, confident, and under control (Jones, 2002; Loehr, 1995). Some researchers defined MT as a stable trait that enables athletes to confront and handle all kinds of physical, mental, and emotional pressures in order to achieve optimal performance (e.g., Clough et al., 2002; Gucciardi et al., 2009; Middleton et al., 2004). From a different perspective, Gucciardi (2017) defined MT as a state-like psychological resource that is purposeful, flexible, and efficient in nature for the achievement and maintenance of goal-directed pursuits. He contended that a state-like MT can have varying properties across situations or times and is open to development or change. With such diversified perspectives on MT, many researchers (e.g., Farnsworth et al., 2022; Gordon et al., 2017; Gucciardi, 2017) contend that MT is a broad and multi-factored concept with many diverse definitions and conceptualizations. These definitions reflect researchers' conceptualizations of MT from different perspectives (trait vs. state), components (self-beliefs, motivation, attitudes, coping and psychological skills, cognitions, and abilities), and how MT influences athletes' behaviour (e.g., rebounding after failures, persistence or refusal to quit, coping effectively with adversity and pressure, retaining concentration in the face of distractions, etc.).

Athletes' success or failure is multifactorial. It depends on the combination of many factors including physical, tactical, technical and psychological factors. The psychological factor is usually the determinant that differentiates a winner and a loser in sports (Brewer, 2009). For example, Weinberg and Gould (2003) indicated that mental ability contributed over 50% in athletes' success when competing against the opponents. In addition, Gould, Hodge, Peterson, and Petlichkoff (1987) stated that mental toughness was the most important for success in wrestling (rated as 82%). In a study involving ten Olympians, they reported mental toughness is one of the highest ranked psychological characteristics that determine a successful performance (Gould, Dieffenbach, & Moffett, 2002). However, despite its frequent use, the term mental toughness remains subjective. Specifically, it is often used to describe a broad term that reflects the ability of an athlete to cope effectively with training and competition demands in an effort to remain resilient (Bull, Shambrook, James, & Brooks, 2005; Connaughton et al., 2008; Fourie & Potgieter, 2001; Jones, Hanton, & Connaughton, 2007; Telwell, Weston, & Greenlees, 2005). Athletes, coaches, and applied sports psychologists have consistently referred to mental toughness as one of the most important psychological characteristics related to outcomes and success in the elite sport. However, it is probably one of the least understood terms used in applied sport psychology (Jones, Hanton, & Connaughton, 2002). This is partly due to a wide variety of definitions, measurements and research designs used when researching this construct. In order to facilitate further understanding of this construct, a sport-specific use of this terminology is warranted.

Psychological preparation of athletes is one of the basic elements in sports training. In order for a player to be able to improve his/her sports skill level, he or she should effectively cope with stress, challenges and difficulties they face during the sporting competition and during

training. Research indicates that participation in sports competitions is a source of strong stress. It is considered that mental toughness is one of the factors determining the effectiveness of emotional self-regulation, ability to focus on performing tasks and self confidence. Hardy, Bell and Beatti argue that mental toughness means the ability to achieve goals in the face of pressure and the effect of various stressors. Therefore, it is worth paying attention to mental toughness in the context of mental preparation of an athlete. So far, psychologists have not adopted one definition of mental toughness, and researchers propose different theoretical models of this construct. Mental toughness is often presented as a set of psychological skills that determine the effective coping with difficulties, such as concentration, determination, self-confidence and a sense of control. According to Gucciardi, Gordon and Dimmock, mental toughness is linked to sports awareness, challenge and desire to succeed. This concept is also defined as the ability to recover from failure or taking up challenges and pursuing a goal despite difficulties. According to some researchers, mental toughness contains a cognitive, behavioural and emotional component. Different models of mental toughness have been discussed in the literature. Sheard, who is the author of the 3C model, approached mental toughness as a relatively constant property consisting of 3 factors: control, constancy and confidence. Clough et al. presented the standpoint that mental toughness should be defined as a personality trait that determines responses to a challenge or pressure regardless of the situation. His 4C model shows mental toughness as a system of 4 factors: control, confidence, challenge and commitment. Mental toughness is dependent on genetic factors, but is also affected by environmental influences, so it can be deliberately developed. According to Crust and Clough, in developing mental toughness, an environment that supports, but also challenges, social support and learning through experience ending with one's own reflection is important. In difficult situations, mentally tough people use

more coping strategies, such as internal dialogue, visualization and attention control. They have psychological skills that allow them to deal effectively with anxiety and set goals. These skills can be developed in mental training. For example, mindfulness training is an effective tool for building mental toughness. The results of Ajilchla et al. confirm the increase in mental toughness of basketball players after a 6-week mindfulness training. It is also possible to influence athletes through trainers and parents, using social support mechanisms.

### **Early conceptualization of mental toughness**

The first academic reference to the concept of mental toughness was proposed by Cattell, Blewett, and Beloff (1955) who suggested 'tough-mindedness' as a culturally or environmentally determined personality trait fundamental to individual success. Purported to be one of sixteen primary traits that described personality, Cattell (1957) viewed tough minded individuals as self-reliant, realistic and responsible, and contrasted this with emotional sensitivity. This position was supported by suggestions that "the athlete who is mentally tough is somewhat insensitive to the feelings and problems of others" (Tutko & Richards, 1971), and that "being able to handle pressure off the field can help you be mentally tough on it" (Tapp, 1991). Whilst others supported the notion that mental toughness was a personality trait (Kroll, 1967; Werner & Gottheil, 1966), others have challenged this (Dennis, 1978), with some purporting that the construct is simply a state of mind (Gibson, 1998) or even just a set of psychological characteristics (Bull, Albinson, & Shambrook, 1996). Most elite athletes contended that at least 50% of their superior athletic performance was the result of mental or psychological factors that reflected the phenomenon of mental toughness (Loehr, 1982, 1986), whereas 83% of wrestling coaches rated it as the most important psychological characteristics for determining competitive success (Gould et al., 1987). The extensive work of Loehr (1982, 1986) who advocated that

mental toughness is an attribute of those who respond to problems, pressure, making mistakes and competition with the right attitude. According to Loehr (1986), mentally tough performers are disciplined thinkers who respond to pressure in ways which enables them to remain feeling relaxed, calm and energized simply because of the ability to sustain positive energy flow despite adversity. In addition, Loehr (1986) published a model of mental toughness that included seven characteristics: self confidence, negative energy, attention control, visual and imagery control, motivation, positive energy, and attitude control. Although this model is conceptually appealing, Loehr did not provide a rationale for the selection of the seven mental toughness factors. However, Loehr (1995) pointed out that mental toughness can be developed and acquired, and not just innate genetic traits (Gucciardi et al., 2009). Crust (2007) noted that one point of contention in the literature had been related to whether mental toughness is conceptualized as an inherited, innate personality characteristic or if the acquisition of mental toughness is believed to be due more to environmental factors and learning. In addition, these studies are not based on rigorous theoretical and scientific methods. The limitations of earlier studies reflect the development of mental toughness in the future. Therefore, contemporary research begins to explore the definition and characteristics of mental toughness with qualitative and quantitative research patterns. The next section focuses on the qualitative approaches to the study of mental toughness.

### **Qualitative approaches to the study of mental toughness**

In a pioneering qualitative study of mental toughness, Fourie and Potgieter (2001) analyzed written responses from 131 expert coaches and 160 elite athletes. Coaches and elite athletes responded to a series of open-ended questions requiring them to provide their best definitions and descriptions of mental toughness. They identified twelve components of mental

toughness, including motivation level, coping skills, confidence maintenance, cognitive skills, discipline and goal-directedness, competitiveness, possession of prerequisite physical and mental requirements, team unity, preparation skills, psychological hardiness, and ethics. Drawing from these responses, they recognized the subjective interpretation of the way coaches and athletes described characteristics of mental toughness. For this reason, the researchers concluded that further work was needed to bring about a more objective description and model of mental toughness (Fourie & Potgieter, 2001). In another qualitative study, Jones et al. (2002) employed Kelly's (1955) personal construct theory to understand how mental toughness is construed. In brief, this theory focuses on both the uniqueness of the individual and the processes common to all people. Furthermore, personal construct theory proposes that individuals strive to understand, interpret, anticipate, and control the world of experience in order to deal effectively with it (Kelly, 1955). Using data from ten elite international athletes, Jones et al. (2002) proposed that mental toughness is having the natural or developed psychological edge that enables athletes to (1) generally cope better than the opponents with the many sports demands (competition, training, lifestyle); and (2) specifically more consistent and better than the opponents in staying determined, focused, confident, and in control under pressure. As a result of an inductive thematic content analysis, Jones et al. (2002) identified twelve key attributes of mental toughness including having an unshakable self-belief in one's ability to achieve your competition goals; bouncing back from performance setbacks as a result of increased determination to succeed; having an unshakable self-belief that one's possess unique qualities and abilities; 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 competition-specific unexpected and 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 one can cope with it; thriving on the pressure of competition; not being adversely affected by others' good and bad performances; remaining fully-focused in the face of personal life distractions; and switching a sport focus on and off as required. These related to performance and lifestyle-related focus, self belief, desire and motivation and how a mentally tough performer deals with the pressure (external), anxiety (internal) and the hardship associated with superior performance (i.e., physical and emotional pain). A limitation in early mental toughness research is its general conceptualization of the construct of mental toughness. One of the studies that attempt to address this is the study of mental toughness specific to cricket players (Bull et al., 2005). The two main issues Bull et al. (2005) addressed in their study were the following: to obtain a better understanding of what mental toughness is for cricketers and to identify how cricketers developed their mental toughness. They used qualitative procedures to interview 12 mentally tough cricketers. The participants were drawn from a total of 101 English cricketers whom were identified by coaches as being the most mentally tough cricketers of the previous 20 years in English cricket. From their results, they presented a model of mental toughness that included four structural categories, each containing a number of themes related to overall mental toughness. These include environmental influence: parents, childhood, the need to earn success, opportunities to survive early setbacks, exposure to foreign cricket; tough character: resilient confidence, independence, self reflection, competitiveness with self as well as others; tough attitudes: never-say-die mindset, go-the-extra-mile mindset, thrive on competition, belief in making a difference, exploit learning opportunities, willing to take risks, belief in quality preparation, determination to make the most of ability, self-set challenging targets; and tough

thinking: thinking clearly—making good decisions, keeping perspective, honest self-appraisal and robust self-confidence—overcoming self-doubts, feeding off physical conditioning, maintaining self-focus (Bull et al., 2005). In another study involving male professional soccer players, Telwellet al. (2005) asked the players to compare their soccer-specific definition and their understanding of mental toughness with that proposed by Jones et al. (2007). The soccer players viewed mental toughness as enabling players to always cope better than their opponents rather than “generally” cope better. Likewise, they identified only ten attributes as opposed to the twelve attributes of mental toughness by Jones et al. (2007). Those attributes included the following: having total self belief at all times that one will achieve success; wanting the ball/wanting to be involved at all times; having the ability to react to situations positively; having the ability to hang on and be calm under pressure; knowing what it takes to grind oneself out of trouble; having the ability to ignore distractions and remain focused; controlling emotions throughout performance; having a presence that affects opponents; having everything outside of the game in control, and enjoying the pressure associated with performance (Telwell et al., 2005).

2007, Jones et al. conducted a follow-up study using a sample of super elite sports performers (i.e., Olympic/ World Champions) to expand the mental toughness knowledge base and broadened the scope by including the perceptions of coaches and sport psychologists who had coached and consulted at that level. Te results mirrored their earlier definition of mental toughness. Moreover, they also extended the list of attributes considered essential to the makeup of mental toughness to 30. These were subsequently categorized into 13 subcomponents of mental toughness, which were then organized into a framework of mental toughness comprising four dimensions; a general Attitude/mindset dimension, and three time-specific dimensions, Training, Competition, and Post competition (Jones et al., 2007).

In an attempt to propose a more specific definition of mental toughness, Gucciardi et al. (2009) employed Kelly's (1955, 1991) Personal Construct Psychology (PCP) and proposed mental toughness as "a collection of experientially developed and inherent sport-specific and sport-general values, attitudes, behaviours, and emotions that influence the way in which an individual approaches, responds to, and appraises both negatively and positively construed pressures, challenges and adversities to consistently achieve his or her goals" (p. 278). Whilst Gucciardi et al. (2008) did not offer a definitive perspective on the key values, attitudes, cognitions and emotions, investigations into the sport-specific components of mental toughness related to Australian rules football (Gucciardi et al., 2008), cricket (Gucciardi & Gordon, 2009) and soccer (Coulter, Mallett, & Gucciardi, 2010), highlighting the emergence of a core group of key mental toughness facets that do not vary significantly by sport (e.g., self-belief, self-motive, attention control, resilience).

### **Mental Toughness and Athletic Performance**

The vast majority of papers revealed a positive relationship between mental toughness and the sports results or performance level. Petho did not establish correlations between the selected statements of the MTQ questionnaire and the results obtained in different equestrian events. However, it should be emphasized that the construct of mental toughness was not used in this survey. Answers to selected questions of the MTQ questionnaire were treated as indices of two variables: physical training and mental training. There were no significant correlations between these variables and the results obtained by beginners and intermediate-level riders in three equestrian events: dressage, show jumping and eventing. They also did not allow predicting the results obtained by the competitors. Surprisingly, the only negative predictor of sports results in equestrianism was motivation. Attention should be paid to at least two factors significantly

different from the other studies included in the review. Firstly, the authors used only selected statements of the mental toughness scale in order to study the variables that were not entirely clearly defined: physical training and mental training. Secondly, in equestrian sports, results depend not only on the athlete (rider), but also on the horse and the relationship between each other. The latter seems to be only partially dependent on the athlete's mental toughness. Also Fawver did not confirm the relationship between mental toughness and performance in alpine skiing. It was expected that at the top of the national ranking of individual competitions would be players with high mental toughness and perfectionism. There were no differences in both psychological constructs between athletes occupying different places in the ranking. However, a negative relationship between mental resilience and time spent on competitions and indirect activities such as watching the rides of other competitors was revealed. The lack of expected dependencies may result from the athletes' young age ( $M = 15.82$ ). According to Gucciardi, mental toughness changes over time, so perhaps it would be reasonable to conduct research in the senior alpine skiing team and to use ride time as an indicator of the level of performance. Adult footballers playing in the semi-professional football league in Australia did not differ from amateurs in general mental toughness, but they were characterized by greater mental toughness in the face of pressure. In other studies, relationships between mental toughness and sporting performance were reflected in:

- A. differences in the mental toughness of athletes with better and worse athletic performance;
- B. correlation coefficients between mental toughness and sporting performance;
- C. regression analysis results indicating mental toughness as a predictor of sports results/performance level.

The results of a cross-sectional study indicated higher mental toughness of medalists in Wushu competitions compared to non-medalists, Australian university rugby players who won the university rugby tournament compared to the British rugby teams who took the next place, teenage wrestlers with a higher number of fights won during the wrestling season compared to their peers who achieved worse results, athletes with a higher level of cricket batting skills compared to athletes with worse performance, African fencing championships medalists compared to non-medalists, kickboxing winners compared to losers, boys competing in sprinting at the elite level compared to their non-elite peers, female players of the Iceland national soccer team compared to players of the first and second league. More mentally tough adolescents practicing swimming achieved better results than their colleagues with lower mental toughness.

Mental toughness of volleyball players whose service efficiency during the season was over 70% was greater than that of less effective players. Australian football players with greater sports skills revealed under pressure were characterized by greater mental toughness. Many authors have found significant correlations between mental toughness and different indices of sports results/level of performance. Dress and Mack have established positive relationships between mental toughness and the percentage of fights won in wrestling. Mental toughness correlated with some performance level indices during a tennis match and points scored at critical moments of the game. Rabab found a significant correlation between mental toughness of handball players and the effectiveness of throwing at the goal. Mental toughness in kickboxers correlated with the result obtained during competition. Mental toughness indices were related to the subjectively assessed level of performance of triathletes and Ironman athletes [38] and the best time in triathlon competitions. There was also a positive relationship between performance and mental toughness in adolescent women volleyball players. Although Newland et al. failed to

find significant correlations between the total mental toughness index and basketball performance index, the researchers found that mental toughness was its predictor but only in men. Mental toughness also allowed predicting the results obtained by kickboxers. In controlling the number of completed competitions, mental toughness was the only predictor of the best result of triathletes. Mental toughness was a predictor of effectiveness under pressure in adult Australian footballers.

### **Measuring mental toughness**

Measuring mental toughness is a complex and multifaceted task because it involves assessing an individual's ability to cope with stress, adversity, and challenges while maintaining performance and well-being. Researchers and psychologists have developed various tools and scales to measure mental toughness, each with its own strengths and limitations. Here are some of the commonly used ones:

1. **Mental Toughness Questionnaire (MTQ):** The MTQ is one of the most widely used tools to measure mental toughness. It was developed by Clough et al. and assesses various components of mental toughness, including control, commitment, challenge, and confidence. It consists of 48 items and is often used in sports psychology and business settings.
2. **Sports Mental Toughness Questionnaire (SMTQ):** This questionnaire is specifically designed to measure mental toughness in athletes. It assesses an athlete's ability to stay focused, stay confident, handle pressure, and perform under challenging conditions.

3. **Psychological Performance Inventory (PPI):** Developed by Bull et al. (2005), The PPI is another scale used to measure mental toughness in athletes. It focuses on aspects such as self-belief, motivation, focus, and emotional control.
4. **Connor-Davidson Resilience Scale (CD-RISC):** Although not explicitly designed to measure mental toughness, the CD-RISC assesses an individual's resilience, which is closely related to mental toughness. It measures an individual's ability to bounce back from adversity and stress.
5. **Mental Toughness Inventory (MTI):** Developed by Golby and Sheard, the MTI assesses mental toughness in athletes. It includes subscales for confidence, constancy, and control.
6. **Sports Mental Toughness Inventory (SMTI):** Developed by Golby et al. (2007), this inventory assesses mental toughness in a sports context and includes dimensions like confidence, constancy, concentration, and emotional control.
7. **Mental Toughness Scale (MTS):** The MTS, developed by Kaiseler, Polman, and Nicholls, measures mental toughness in sport and consists of four dimensions: confidence, control, commitment, and challenge.
8. **Four Cs of Mental Toughness Scale:** This scale, developed by Gucciardi and colleagues, assesses mental toughness through four dimensions: challenge, commitment, confidence, and control. It is designed to be applicable in various domains, including sports, business, and education.
9. **Psychological Toughness Inventory (PTI):** The PTI measures psychological toughness in various domains, including sports, work, and education. It assesses dimensions such as emotional control, confidence, and resilience.

10. **Toughness Scale (TS):** The TS, developed by Sheard and Golby, assesses mental toughness in sport and includes subscales for confidence, constancy, and control.
11. **Toughness Test (3T):** This test measures mental toughness in a workplace context. It evaluates an individual's ability to handle stress, adapt to change, and maintain performance under pressure.
12. **Resilience Scale for Adults (RSA):** Like the CD-RISC, the RSA measures an individual's resilience, which is closely related to mental toughness. It assesses an individual's ability to adapt and thrive in the face of adversity.

It's important to note that while these tools and scales provide valuable insights into an individual's mental toughness; they may have cultural or situational biases and limitations. Additionally, mental toughness is a complex trait that can be challenging to quantify accurately. Researchers often use a combination of these measures and consider other factors, such as behavioral observations and interviews, to gain a more comprehensive understanding of an individual's mental toughness.

## **Mental toughness and its component**

### **1. Resilience**

Resilience is a fundamental aspect of mental toughness. It refers to an athlete's ability to bounce back from failures, setbacks, and injuries. Resilient athletes view challenges as opportunities for growth, display adaptability, and maintain a positive attitude despite adversity (Fletcher & Sarkar, 2012). Resilience is a crucial component of mental toughness and plays a significant role in an individual's ability to bounce back from setbacks, adapt to challenges, and maintain a positive mindset. It is the capacity to recover and thrive despite

adversity (Fletcher & Sarkar, 2012). Resilient individuals possess the mental strength to overcome obstacles and persevere through difficult situations.

Resilience involves several key elements.

First, it includes the ability to cope effectively with stress, pressure, and unexpected circumstances. Resilient individuals have developed effective coping mechanisms, such as problem-solving skills, emotional regulation strategies, and seeking support when needed. They are able to manage their emotions in challenging situations and remain focused on finding solutions rather than dwelling on setbacks.

2. Second, resilience involves adaptability and flexibility. Resilient individuals are open to change and can adjust their goals, strategies, and approaches as necessary. They possess a growth mindset, viewing challenges as opportunities for learning and growth rather than as insurmountable obstacles. This mindset enables them to adapt their plans and strategies, embrace new perspectives, and seize opportunities even in the face of adversity.
3. Third, resilience is closely linked to self-belief and a positive mindset. Resilient individuals have confidence in their abilities and believe in their capacity to overcome challenges. They possess a sense of optimism and maintain a positive outlook, focusing on strengths and possibilities rather than dwelling on limitations or failures. This positive mindset enables them to maintain motivation, persistence, and a belief in their ability to overcome obstacles.

Furthermore, resilience is not solely an individual trait but can be nurtured and developed. Through experiences, support systems, and deliberate practice, individuals can cultivate resilience and enhance their ability to bounce back from adversity. Training programs and

interventions aimed at developing resilience can incorporate techniques such as cognitive restructuring, stress management strategies, and fostering social support networks.

In the context of athletic performance, resilience is crucial for athletes to navigate the ups and downs of their careers. It helps them cope with injuries, setbacks, and periods of poor performance. Understanding resilience as a component of mental toughness is vital for designing interventions and strategies to enhance athletes' ability to thrive in the face of challenges. By focusing on building resilience, coaches, trainers, and sports psychologists can support athletes in developing the psychological skills necessary for handling adversity, maintaining motivation, and achieving long-term success.

## **2. Self-Confidence**

Self-confidence is the belief in one's own abilities to perform successfully. Athletes with high self-confidence trust their skills, techniques, and training, enabling them to approach competitions with a positive mindset. This belief in their capabilities contributes to increased motivation, reduced performance anxiety, and better performance outcomes (Hays et al., 2009). It refers to the belief in one's own abilities and the assurance of being able to perform effectively. Self-confidence is essential for athletes in several ways. First, it influences an athlete's motivation and willingness to engage in challenging tasks. When athletes possess self-confidence, they are more likely to set ambitious goals, take risks, and persist in the face of obstacles or setbacks. Their belief in their abilities fuels their motivation to put forth the necessary effort to succeed (Weinberg & Gould, 2015).

- Second, self-confidence enhances an athlete's performance by influencing their thoughts, emotions, and behaviors. Athletes with high self-confidence tend to exhibit positive thoughts, such as focusing on their strengths and past successes. This positive mindset allows them to approach competitions with a greater sense of control and belief in their ability to handle pressure situations (Vealey, 2018).
- Furthermore, self-confidence influences an athlete's emotions and helps regulate anxiety and stress levels. Athletes with high self-confidence experience lower levels of performance anxiety, allowing them to remain calm, composed, and focused during critical moments. This emotional control enables athletes to execute their skills more effectively and make better decisions under pressure (Vealey, 2018).

### 3. Motivation

Motivation refers to the internal drive that directs and sustains an individual's behavior in pursuit of desired outcomes (Weinberg & Gould, 2015). Motivation can be defined as a psychological drive which initiates and maintain a goal oriented behavior. Motivation can be classified into two main types: intrinsic motivation and extrinsic motivation.

**Intrinsic Motivation:** Intrinsic motivation refers to being internally motivated by factors such as enjoyment, satisfaction, and the inherent pleasure derived from participating in a specific sport or activity (Deci & Ryan, 2008). Athletes who are intrinsically motivated engage in sports because they genuinely love and enjoy the process of competing and improving their skills. Their

motivation comes from the sheer joy and personal fulfillment they experience through their involvement in the sport.

**Extrinsic Motivation:** Extrinsic motivation refers to being motivated by external factors such as rewards, recognition, and social approval (Ryan & Deci, 2000). Athletes who are extrinsically motivated are driven by external rewards, such as financial incentives, medals, trophies, or praise from others. These external factors serve as sources of motivation and reinforcement for their performance.

Motivation plays a crucial role in athletic performance in several ways:

- **Goal Setting and Direction:** Motivation provides athletes with a sense of direction and purpose. It helps them set specific, challenging, and achievable goals that serve as markers of progress and provide a roadmap for their efforts (Locke & Latham, 2006). Goals give athletes something to strive for, ensuring that their efforts are focused and directed towards meaningful outcomes.
- **Effort and Persistence:** Motivation fuels an athlete's effort and persistence. Athletes who are highly motivated are willing to invest time and energy in their training, consistently putting forth the necessary effort to improve and excel (Weinberg & Gould, 2015). They exhibit a strong work ethic, push through challenges, and persist in the face of setbacks.
- **Performance Enhancement:** Motivation positively influences an athlete's performance. When athletes are motivated, they are more likely to engage in deliberate practice, seek feedback, and continuously work on improving their skills (Ericsson et al., 1993). Motivated athletes

are focused, attentive, and fully engaged in their training and competition, which enhances their performance outcomes.

- **Emotional Regulation:** Motivation plays a role in regulating an athlete's emotions, particularly anxiety and stress. Highly motivated athletes are more likely to experience lower levels of performance anxiety as they have confidence in their abilities and believe in their capacity to handle pressure situations (Vealey, 2018). This emotional control allows them to perform at their best and make better decisions under pressure.

#### **4. Focus and Concentration**

Athletes with strong mental toughness can maintain concentration, block out distractions, and remain fully engaged in the present moment during training and competition. This heightened focus allows for better decision-making, anticipation, and execution of skills (Jones et al., 2007). They refer to the ability to direct and maintain attention on relevant cues, tasks, and goals while blocking out distractions (Jones et al., 2002). Athletes with strong focus and concentration skills can maintain a high level of attention and fully engage in the present moment, enabling them to make quick and accurate decisions, execute skills effectively, and perform consistently under pressure.

Focus and concentration contribute to athletic performance in several ways:

- **Enhanced Information Processing:** When athletes are focused and concentrated, they can effectively process and interpret relevant information. They are more attuned to visual and auditory cues, enabling them to anticipate and react to situations swiftly (Masters &

Ogles, 1998). This heightened information processing enhances their ability to make accurate judgments and decisions during training and competition.

- **Improved Skill Execution:** Focus and concentration are crucial for the precise execution of skills. Athletes who are able to maintain concentration on the task at hand can execute technical movements with greater accuracy and consistency (Moran, 2012). This precision in skill execution is particularly important in sports that require fine motor control, such as gymnastics, archery, or golf.
- **Effective Decision Making:** Focus and concentration enable athletes to make optimal decisions in high-pressure situations. When athletes are fully focused, they can evaluate multiple options, assess risks, and select the most appropriate course of action (Eysenck & Calvo, 1992). This ability to make effective decisions quickly and accurately can be a significant advantage in competitive sports.
- **Resilience to Distractions:** Strong focus and concentration skills help athletes stay resilient to distractions. Athletes who can maintain their attention on the task at hand are less likely to be influenced by external factors such as crowd noise, opponents' actions, or negative feedback (Williams et al., 2003). This resilience allows athletes to stay composed, focused, and unaffected by distractions, leading to improved performance outcomes.

## **5. Emotional control**

Emotional control is a vital component of mental toughness and plays a significant role in an athlete's ability to perform at their best. It refers to the capacity to manage and regulate one's

emotions effectively in order to optimize performance and cope with pressure situations (Gucciardi et al., 2009). Athletes with strong emotional control can recognize and channel their emotions in a constructive manner, allowing them to perform at their peak even in high-pressure and challenging circumstances.

Emotional control contributes to athletic performance in several ways:

- **Stress and Anxiety Management:** Emotional control helps athletes manage stress and anxiety, which are common experiences in competitive sports. Athletes who can effectively regulate their emotions experience lower levels of performance anxiety and are better able to handle pressure situations (Gould et al., 2002). This enables them to maintain focus, composure, and clarity of thought, leading to enhanced performance outcomes.
- **Enhanced Decision Making:** Emotional control enables athletes to make better decisions under pressure. When athletes are emotionally composed, they can think more clearly and critically evaluate their options. They are less likely to be influenced by intense emotions that can cloud judgment, leading to more accurate and strategic decision-making (Thelwell et al., 2000).
- **Energy and Focus Allocation:** Emotional control allows athletes to channel their energy and focus more efficiently. Rather than being consumed by negative emotions or distractions, athletes with emotional control can redirect their focus towards the task at hand (Ntoumanis et al., 2009). This enables them to allocate their mental and physical resources effectively, resulting in improved performance.

## **Mental Toughness Factors**

Mental toughness is a characteristic of distinguishing athletes who have higher classes than others. They consistently perform better than others. Some people are in this “zone,” and others fall apart shortly after the competition starts (Przybylski, 2018). Internal factors that affect mental toughness include narcissistic and rivalry (Manley, Jarukasemthawee, & Pisitsungkagarn, 2019), wellbeing (Zoe & Jessie, 2017), and self-concept (Meggs, Ditzfeld, & Golby, 2014). Some research found that self-concept has a positive relationship with mental toughness, while several others established the relationship between self concept with self-control and emotions (a component of mental toughness). Self-awareness and need satisfaction are other factors that affect mental toughness (Cowden & Richard, 2017; Li, Martindale, & Sun, 2019). Additionally, self-esteem also has a strong influence on mental toughness. It is one of the important dimensions of mental toughness. By having confidence, athletes will be able to coordinate the attributes of other mental toughness; although there are obstacles, the athlete will be able to survive well (Zeiger & Zeiger, 2018). Some external factors that affect mental toughness include the attribution retraining program (Parkes & Mallett, 2011), education (Zoe & Jessie, 2017), and community size (Zalewska, Krzywosz-rynkiewicz, Clough, & Dagnall, 2019). From the results of research, Marshall (2017) found evidence that physical factors are predictors of mental toughness. Physical and psychological training in a long time with high competition experience has an impact on mental toughness. Scharneck (2017), in his research on behavior in training and its relationship with mental toughness, found that mental toughness is a predictor of an athlete's performance. His research also found that behavior in training is a significant predictor of mental toughness. Another study about mental toughness was also conducted by SP. Walker, Ph. D who stated that awareness of the events experienced and not judging what should have happened is a

cognitive view that is trying to be raised. The attitude is considered to increase mental toughness. The assumption of an awareness-based approach to performance improvement is that once an individual is free from the need to control his main and emotions, they could be in an optimal position to focus on implementing their ultimate skills. This conceptualization is a different recommendation of cognitive-behavioral interventions and traditional mental skills training, which promotes monitoring, evaluating, and restructuring of cognition to improve performance by optimizing emotional and behavioral regulation (Walker, 2016). Besides some of the factors mentioned above, gender is also a predictor of mental toughness (Dolly & Chhikara, 2017). It takes not only physical preparation for an athlete to compete, but mental preparation also becomes an important factor in preparing for a match. An athlete not only has a mental toughness component, such as self-confidence, emotional control, endurance, success mindset and optimism but also has a mental toughness that can consistently withstand all of these components when under pressure or difficulties. Mental toughness can facilitate the achievement of one's goals when faced with pressure, difficulties, or challenges (Gucciardi, 2016). A person's capacity regarding his ability to manage the positive potential possessed to remain in an emotionally stable condition, self confidence, and optimism, as well as the ability to develop under stressful conditions, are among the definitions where a person has mental toughness (Cowden, Richard, Fuller, & Anshel, 2014).

### **Mental toughness in student athletes**

To become a top athlete requires time, commitment and carefully planned training. Optimum adaptation to training requires the careful balancing of stress and recovery. The student athlete has to balance all these demands with the additional requirements of an academic programme. This can bring unique stresses and challenges.

The demands of high-level sport require the athlete to devote an increasing amount of time to their sport in order to compete effectively (Conzelmann and Nagel 2003). The term ‘student athlete’ can have various meanings. The American literature defines it via the United States Code as an individual who engages in, is eligible to engage in, or may be eligible in the future to engage in, any intercollegiate sport. An individual who is permanently ineligible to participate in a particular intercollegiate sport is not a student athlete for purposes of that sport. (United States Code 2004, 104) However, Aquilina (2009, 27) with a more generic definition, considers a student athlete as ‘a group of individuals who are still in education but also train at a high level in sport’ while Pato et al. (2014, 21) defines a student athlete as ‘a person who is a full-time university or high school student, and who participates in athletics or play sport as an individual or member of a federation, a club, or a sport association’.

In this research, student athletes were defined as those individuals who are actively involved in both academic pursuits and competitive sports activities within an educational institution, such as the University of Benin. Where they are enrolled as students and participate in organized sports programs.

### **The complex nature of the student athlete**

The student athlete has the additional demands of an academic course to balance with their sporting activities. Compared to their non-student counterparts, student athletes meet additional challenges on a daily basis (Parham 1993). First-year college comes with the further challenge of a completely different new environment. The transition from second- to third-level education has consistently been recognised as potentially difficult (Gardner 1986; Upcraft and Gardner 1989b; Upcraft et al. 2008). The student has to establish a new routine to avoid

unnecessary stress but the student athlete has to cope with the additional stressor that comes with the demands of the sport and must be able to excel academically. In a study on Division 1 freshman athletes, Wilson and Pritchard (2005) identified six major types of stress (relationship, academic, financial, physical and mental, body satisfaction and social stress) to which the new third-level student athlete is subjected. Balancing priorities is key as the high-performance student athlete aims to reach a high level academically while continuing to perform in their sport. While it is not uncommon for the elite student athlete to devote 20 or more hours a week to practice, games, recovery and weightlifting sessions (Simons, Derek Van, and Covington 1999), the amount of hours dedicated to academic study varies hugely between subjects. The final years of study can also have widely different academic demands (Aquilina 2009) and when combined with the professional requirements of some subjects can present a significantly greater workload in the final years of study.

### **Stress and the Stress Response**

In its most simplistic definition, stress can be described as a state of physical and psychological activation in response to external demands that exceed one's ability to cope and require a person to adapt or change behavior. As such, both cognitive and environmental events that trigger stress are called stressors (Statler and DuBois, 2016). Stressors can be acute or chronic based on the duration of activation. Acute stressors may be defined as a stressful situation that occurs suddenly and results in physiological arousal (e.g., increase in hormonal levels, blood flow, cardiac output, blood sugar levels, pupil and airway dilation, etc.) (Selye, 1976). Once the situation is normalized, a cascade of hormonal reactions occurs to help the body return to a resting state (i.e., homeostasis). However, when acute stressors become chronic in nature, they may increase an individual's risk of developing anxiety, depression, or

metabolic disorders (Selye, 1976). Additionally, the manner in which athletes respond to a situational or environmental stressor is often determined by their individual perception of the event (Gould and Udry, 1994; Williams and Andersen, 1998; Ivarsson et al., 2017). In this regard, the athlete's perception can either be positive (eustress) or negative (distress). Even though they both cause physiological arousal, eustress also generates positive mental energy whereas distress generates anxiety (Statler and DuBois, 2016). Therefore, it is essential that an athlete has the tools and ability to cope with these stressors in order to have the capacity to manage both acute and chronic stress hence the role of mental toughness comes to play.

## **ACADEMIC STRESS**

Fundamentally, collegiate athletes have two major roles they must balance as part of their commitment to a university: being a college student and an athlete. Academic performance is a significant source of stress for most college students (Aquilina, 2013; López de Subijana et al., 2015; de Brandt et al., 2018; Davis et al., 2019). This stress may be further compounded among collegiate athletes based on their need to be successful in the classroom, while simultaneously excelling in their respective sport (Aquilina, 2013; López de Subijana et al., 2015; Huml et al., 2016; Hamlin et al., 2019). Davis et al. (2019) conducted surveys on 173 elite junior alpine skiers and reported significant moderate to strong correlations between perceived stress and several variables including depressed mood ( $r = 0.591$ ), sleep disturbance ( $r = 0.459$ ), fatigue ( $r = 0.457$ ), performance demands ( $r = 0.523$ ), and goals and development ( $r = 0.544$ ). Academic requirements were the highest scoring source of stress of all variables and was most strongly correlated with perceived stress ( $r = 0.467$ ). Interestingly, it was not academic rigor that was viewed by the athletes as the largest source of direct stress; rather, the athletes surveyed reported

time management as being their biggest challenge related to academic performance (Davis et al., 2019)

According to Aquilina (2013), collegiate athletes tend to be more committed to sports development and may view their academic career as a contingency plan to their athletic career, rather than a source of personal development. As a result, collegiate athletes often, but certainly not always, prioritize athletic participation over their academic responsibilities (Miller and Kerr, 2002; Cosh and Tully, 2014, 2015). Nonetheless, scholarships are usually predicated on both athletic and academic performance. For instance, the National Collegiate Athletic Association (NCAA) requires collegiate athletes to achieve and maintain a certain grade point average (GPA). Furthermore, they are also often required to also uphold a certain GPA to maintain an athletic scholarship. The pressure to maintain both high levels of academic and athletic performance may increase the likelihood of triggering mental health issues (i.e., anxiety and depression) (Li et al., 2017; Moreland et al., 2018).

## **ATHLETIC STRESS**

The domain of athletics can expose collegiate athletes to additional stressors that are specific to their cohort (e.g., sport-specific, team vs. individual sport) (Aquilina, 2013). Time spent training (e.g., physical conditioning and sports practice), competition schedules (e.g., travel time, missing class), dealing with injuries (e.g., physical therapy/rehabilitation, etc.), sport-specific social support (e.g., teammates, coaches) and playing status (e.g., starting, non-starter, being benched, etc.) are just a few of the additional challenges collegiate athletes must confront relative to their dual role of being a student and an athlete (Maloney and McCormick, 1993; Scott et al., 2008; Etzel, 2009; Fogaca, 2019). Collegiate athletes who view the demands

of stressors from academics and sports as a positive challenge (i.e., an individual's self-confidence or belief in oneself to accomplish the task outweighs any anxiety or emotional worry that is felt) may potentially increase learning capacity and competency (NCAA, 2014). However, when these demands are perceived as exceeding the athlete's capacity, this stress can be detrimental to the student's mental and physical health as well as to sport performance (Ivarsson et al., 2017; Li et al., 2017). As previously stated, time management has been shown to be a challenge to collegiate athletes. The NCAA rules state that collegiate athletes may only engage in required athletic activities for 4 h per day and 20 h/week during in-season and 8 h/week during off-season throughout the academic year. Although these rules have been clearly outlined, the most recent NCAA GOALS (2016) study reported alarming numbers regarding time commitment to athletic-related activities. Data from over 21,000 collegiate athletes from 600 schools across Divisions I, II, and III were included in this study. Although a breakdown of time commitments was not provided, collegiate athletes reported dedicating up to 34 h per week to athletics (e.g., practices, weight training, meetings with coaches, tactical training, competitions, etc.), in addition to spending between 38.5 and 40 h per week working on academic-related tasks. This report also showed a notable trend related to athletes spending an increase of ~2 more athletics-related hours per week compared to the 2010 GOALS study, along with a decrease of 2 h of personal time (from 19.5 h per week in 2010 to 17.1 in 2015). Furthermore, ~66% of Division I and II and 50% of Division III athletes reported spending as much or more time in their practices during the off-season as during the competitive season (DTHOMAS, 2013). These numbers show how important it is for collegiate athletes to develop time management skills to be successful in both academics and athletics. Overall, most collegiate athletes have expressed a need to find time to enjoy their college experience outside of athletic obligations (Paule and

Gilson, 2010). Despite that, because of the increasing demand for excellence in academics and athletics, collegiate athletes' free time with family and friends is often scarce (Paule and Gilson, 2010).

### **Mental Toughness Training and Interventions**

Student-athletes face a unique challenge of juggling rigorous academic demands alongside the pressures of competitive sports. The development of mental toughness is crucial for their success both on the field and in the classroom. Here I explore a range of strategies and interventions specifically designed to enhance mental toughness in student-athletes, providing detailed insights on such interventions.

### **Goal Setting**

Goal setting is a foundational strategy for student-athletes. It involves establishing clear, specific, and achievable objectives in both academics and sports. This practice not only enhances motivation but also directs their efforts effectively, helping them strike a balance between their dual roles as students and athletes (Locke & Latham, 1990).

### **Time Management Skills**

Effective time management is a critical skill for student-athletes. They learn to prioritize tasks, create schedules, and efficiently manage their time. This skill empowers them to handle the demands of coursework and sports commitments without compromising their performance in

either area. (Britton, B. K., & Tesser, A. (1991). Effects of time-management practices on college grades. *Journal of Educational Psychology*, 83(3), 405-410.)

### **Psychological Skills Training (PST)**

Psychological Skills Training (PST) encompasses a range of techniques tailored to the needs of student-athletes. These techniques include imagery, self-talk, relaxation, and focus control. PST equips them with tools to manage anxiety, bolster self-confidence, and enhance concentration in both academic and athletic pursuits. (Weinberg, R. S., & Gould, D. 2014 *Foundations of sport and exercise psychology*. Human Kinetics).

### **Resilience Training**

Resilience training programs focus on teaching student-athletes how to bounce back from setbacks and adversity. By developing coping strategies and maintaining a positive mindset, student-athletes are better equipped to handle academic challenges and competitive pressures (Fletcher & Sarkar, 2012).

### **Mental Toughness Training Programs**

Structured mental toughness programs, often based on attributes like control, commitment, challenge, and confidence, target the specific needs of student-athletes. These programs include exercises and activities tailored to develop resilience and grit, enabling them to excel academically and athletically (Connaughton et al., 2008).

### **Mindfulness and Meditation**

Mindfulness practices, including meditation, help student-athletes stay grounded in the present moment. These techniques improve focus, emotional control, and stress management, vital for managing the pressures of academics and sports (Gardner & Moore, 2007).

### **Support Systems**

Building a robust support network is essential for student-athletes. Coaches, teammates, and academic advisors provide emotional and practical support, creating an environment conducive to mental toughness development.

### **Stress Management and Coping Skills**

Student-athletes benefit from learning stress management techniques and effective coping strategies. These skills enable them to navigate academic and sports-related stressors effectively.

### **Performance Profiling and Self-Assessment**

Student-athletes can conduct self-assessments of their mental toughness using performance profiling tools. These evaluations identify strengths and areas for improvement, providing valuable guidance for mental toughness training.

### **Positive Self-Talk and Self-Confidence Building**

Developing positive self-talk habits and building self-confidence are crucial for student-athletes. These practices help manage self-doubt and maintain a strong belief in their abilities.

The strategies and interventions highlighted provide a comprehensive framework for enhancing mental toughness in student-athletes. By tailoring these techniques to their unique

needs and circumstances, coaches, sports psychologists, and academic advisors can empower student-athletes to excel academically and athletically while fostering invaluable life skills.

### **Summary Of Reviewed Related Literature**

The studies in this paper mainly covered the influence of mental toughness as correlates of athletic performance among student athletes in the University of Benin. The literature review was relevant to this research area of study. The studies reviewed were carried out in Nigeria (University of Benin) and mostly focused on theoretical framework, Concept of mental toughness, component of mental toughness, factors of mental toughness, measuring mental toughness and mental toughness in student athletes.

Although this study reviewed articles and works of other authors but none answered the purpose to which this research is being undertaking to assess the influence of mental toughness as correlates of athletic performance among University of Benin athletes.



## **CHAPTER THREE**

### **METHODOLOGY**

The chapter deals with the methods of the study. It will be discussed under the following sub headings.

- Research Design
- Population of the study
- Sampling and sampling techniques
- Research Instrument
- Validity of the Instrument
- Reliability of the Instrument
- Method of Data Collection
- Method of Data Analysis

#### **Research Design**

This study employs the Correlation research design for the study. The correlation research design is a type of research design used to examine the relationship between two or more variables. It aims to determine whether changes in one variable are associated with changes in another variable, and to what extent these changes occur together.

#### **Population of the Study**

The population of this study comprises of two hundred and forty three (243) student athletes currently enrolled at the University of Benin (as obtained from the university director of sports).

These athletes represented a diverse group participating in various sports, including but not limited to track and field, football, basketball, handball and tennis. The study population is defined by their active participation in competitive sports representing the university at various university competitions.

### **Sample and Sampling Techniques**

The sample size that will be used for this study will be 121. Multiple sampling procedure was used to select the sample. First it involved stratifying the student athletes into various sports. Secondly, proportionate stratified sampling technique was used. This involve picking 50 percent of the total population, totaling 121.

### **Research Instrument**

The primary research instrument for data collection is a self structured questionnaire developed specifically for this study. The questionnaire was constructed based on the variables stated in the research questions. The questionnaire comprise of 2 sections. Section A and Section B. Section A consisted of the respondent's bio-data. Section B contains questions relating to the variables stated in the research questions. The responses adopted the four-point modified Likert scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD)

### **Validity of the Instrument**

To establish the validity of the questionnaire, it underwent a rigorous review process by experts in the fields of sports psychology in the department of human kinetics and sports science of the University of Benin. Their feedback was incorporated into the final version of the instrument.

### **Reliability of the Instrument**

The reliability of the questionnaire was evaluated using test-retest reliability. A subset of participants completed the questionnaire twice, with a two-week interval between administrations. The responses were then analyzed to assess the consistency and stability of the instrument's measurements. The internal consistency of the questionnaire was also assessed using Cronbach's alpha coefficient.

### **Method of Data Collection**

Data was be collected personally by the researcher with one research assistant after administering the instrument to the respondents. Effort was made to thoroughly explain the questions to the respondents in a manner that makes them to respond objectively to the questions asked.

### **Method of Data Analysis**

Quantitative data collected through the questionnaire was analyzed using statistical software (SPSS). Correlation analysis and regression analysis were employed to examine the relationships between mental toughness and athletic performance variables. Pearson product moment correlation coefficient was used and regression analyses were used to analyze hypothesis tested at 0.05 level of significance.

## CHAPTER FOUR

### PRESENTATION OF RESULTS AND DISCUSSION OF FINDINGS

**Research question 1:** What is the relationship between mental toughness and sports performance of students' athletes of the University of Benin?

**Hypothesis 1:** There will be no significant relationship between mental toughness and sport performance of student athletes.

**Table 1:** Pearson correlation statistics on relationship between mental toughness and sports performance.

---

Variables	N	Mean	SD	r	P-value	Decision
Mental toughness	121	34.07	4.717	0.934	0.000	It is rejected
Sports performance	121	68.70	8.243			

---

From the data in table 1, mental toughness has a mean of 34.07, while sports performance has a mean of 68.70. Thus, sports performance has a higher mean. With an r-value of 0.934, there is a positive strong relationship between mental toughness and sports performance of student athletes. The p-value of 0.000 which is less than 0.05 level of significance shows the null hypothesis is rejected, thus there is a significant relationship between mental toughness and sports performance of student athletes.

**Research question 2:** What is the relationship between concentration and sports performance of students' athletes of the University of Benin?

**Hypothesis 2:** There will be no significant relationship between concentration and sports performance of student athletes.

**Table 2:** Pearson correlation statistic on relationship between concentration and sports performance.

---

variables	N	Mean	SD	r	P-value	Decision
Concentration	121	17.43	2.2387	0.776	0.000	It is rejected
Sports performance	121	68.70	8.243			

---

From the data in table 2, concentration has a mean of 17.43, while sports performance has a mean of 68.70. Thus, sports performance has a higher mean. With an r-value of 0.776, there is a positive strong relationship between concentration and sports performance of student athletes. The p-value of 0.000 which is less than 0.05 level of significance shows the null hypothesis is rejected thus, there is a significant relationship between concentration and sports performance of student athletes.

**Research question 3:** What is the relationship between self-confidence and sports performance of students' athletes of the University of Benin?

**Hypothesis 3:** There will be no significant relationship between self confidence and sports performance of student athletes.

**Table 3:** Pearson correlation statistics on relationship between self-confidence and sports performance.

---

Variables	N	Mean	SD	r	P-value	Decision
Self-confidence	121	20.84	2.869	0.685	0.000	It is rejected
Sports performance	121	68.70	8.243			

---

From the data in table 3, self-confidence has a mean of 20.84, while sports performance has a mean of 68.70. Thus sports performance has a higher mean. With an r-value of 0.685, there is a positive moderate relationship between self-confidence and sports performance of student athletes. The p-value of 0.000 which is less than 0.05 level of significance shows the null hypothesis is rejected thus, there is a significant relationship between self-confidence and sports performance of student athletes.

**Research question 4:** What is the relationship between mental toughness and sports performance of students athletes of the University of Benin based on gender?

**Hypothesis 4:** There will be no significant relationship between mental toughness and sports performance of student athletes of the University of Benin based on gender.

**Table 4:** Multiple regression statistics on relationship between mental toughness and sports performance of student athletes based on gender.

**Model Summary**

<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the estimate</b>	<b>R.Square Change</b>	<b>F Change</b>	<b>Statistics</b>		
						<b>df 1</b>	<b>df 2</b>	<b>Sig. F Change</b>
.936	.876	.874	2.923	.876	418.023	2	118	.000

From the data in table 4, with r-value of .936 there is a positive strong relationship between the predictors mental toughness and gender on sports performance. The R square value of 0.876(87.6%) shows that both mental toughness and gender predict 87.6% of the variance of sports performance.

**Analysis Of Variance (ANOVA)**

	<b>Sum of squares</b>	<b>df</b>	<b>Mean square</b>	<b>F</b>	<b>Sig.</b>	<b>Decision</b>
Regression	7144.860	2	3572.430	418.023	0.000	It is rejected
Residual	1008.429	118	8.546			

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8153.289      120

Total

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From the data in the ANOVA table, the F value is 418.023. The p-value is 0.000 which is less than 0.05 level of significance, hence the null hypothesis is rejected which showed that there is a significant relationship between mental toughness and sports performance of student athletes based on gender.

#### **Coefficients (sports performance)**

---

	Standard Coefficient		
Model	Beta	t	Sig.
(Constant)		6.944	.000
Gender	-0.061	-1.843	.068
Mental toughness	.947	28.578	.000

---

The data from the coefficient table showed that mental toughness was the highest predictor ( $\beta=.947$ ) of sports performance.

## **Discussion of findings**

Research question 1: What is the relationship between mental toughness and sports performance of students' athletes of the University of Benin?

Hypothesis 1: There will be no significant relationship between mental toughness and sport performance of student athletes.

The findings from this study show that there is a positive strong relationship between mental toughness and sports performance of student athletes. Thus, there is a significant relationship between mental toughness and sports performance of student athletes of the University of Benin.

This goes along with Dress and Mack study which established positive relationships between mental toughness and the percentage of fights won in wrestling. Also Rabab found a significant correlation between mental toughness of handball players and the effectiveness of throwing at the goal. Gould, Dieffenbach, & Moffett, 2002 study involving ten Olympians, they reported mental toughness is one of the highest ranked psychological characteristics that determine at successful performance. However Fawver did not confirm the relationship between mental toughness and performance in alpine skiing. It was expected that at the top of the national ranking of individual competitions would be players with high mental toughness and perfectionism.

Research question 2: What is the relationship between concentration and sports performance of students' athletes of the University of Benin?

Hypothesis 2: There will be no significant relationship between concentration and sports performance of student athletes.

The findings from this study show that there is a positive strong relationship between concentration and sports performance of student athletes. Thus, there is a significant relationship between concentration and sports performance of student athletes of the University of Benin.

This aligns with Williams et al., 2003 who stated Athletes who can maintain their attention on the task at hand are less likely to be influenced by external factors such as crowd noise, opponents' actions, or negative feedback. This allows athletes to stay composed, focused, and unaffected by distractions, leading to improved performance outcomes.

Research question 3: What is the relationship between self-confidence and sports performance of students' athletes of the University of Benin?

Hypothesis 3: There will be no significant relationship between self-confidence and sports performance of students' athletes of the University of Benin.

The present study reported that there is a positive moderate relationship between self confidence and sports performance. A similar study reported that self-confidence enhances an athlete's performance by influencing their thoughts, emotions, and behaviors. Athletes with high self-confidence tend to exhibit positive thoughts, such as focusing on their strengths and past successes. This positive mindset allows them to approach competitions with a greater sense of control and belief in their ability to handle pressure situations (Vealey, 2018).

Research question 4: What is the relationship between mental toughness and sports performance of students athletes of the University of Benin based on gender?

Hypothesis 4: There will be no significant relationship between mental toughness and sports performance of students athletes of the University of Benin based on gender.

The present study reported that there is a positive strong relationship between the predictors mental toughness and gender on sports performance. The R square value of 0.876(87.6%) shows that both mental toughness and gender predict 87.6% of the variance of sports performance. Other studies has reported that men tend to perform better than women in sports because of certain factors such as testosterone level, bone density, body composition etc. However, the present study reported that mental toughness was the highest predictor ( $\beta=.947$ ) of sports performance. This shows that mental toughness comes first in sports performance before the gender factor. Thus, there is a significant relationship between mental toughness and sports performance of student athletes of the University of Benin based on gender. A similar study by Gucciardi, D.F., Gordon, S., and Dimmock, J.A. found no gender differences in mental toughness scores, because the athletes in the study had similar sporting experience, it is possible that both men and women developed similar levels of mental toughness.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION ANDRECOMMENDATIONS**

This chapter presents the summary, conclusion and recommendation on the Influence of mental toughness as correlates of athletic performance among student athletes of the University of Benin.

#### **Summary**

This study aimed to investigate the influence of mental toughness as correlates of athletic performance among student athletes at the University of Benin. Having gone through thorough examination and analysis of data collected, the researcher discussed in this chapter the results based on the four research questions and four hypotheses that guides the study. The Correlation research design was adopted in carrying out this study. The instrument used for data collection was a structured questionnaire developed specifically for this study along with a sports performance scale. The population for study was 243 student athletes of the University of Benin, with a sample size of 121. In analyzing the data, Pearson correlation statistics were used to analyze hypotheses 1, 2, and 3, while multiple regression statistics were applied to hypothesis 4. The findings of this study revealed several significant relationships.

- First, there is a significant relationship between mental toughness and sports performance, suggesting that athletes with higher levels of mental toughness tend to perform better in their respective sports.
- Second, a significant relationship was found between concentration and sports performance, underlining the importance of maintaining focus in sports. This shows that an increase in concentration leads to an increase in sports performance.
- Third, a significant relationship was identified between self-confidence and sports performance, emphasizing the role of self- belief of one's ability. This shows performance.
- Finally, this study discovered that both mental toughness and gender predict 87.6% of the variance of sports performance. However, mental toughness was the highest predictor of sports performance. This goes to show that mental toughness will definitely increase sports performance regardless of gender. There is a significant relationship between

mental toughness and sports performance of student athletes of the University of Benin based on gender.

## **Conclusion**

In conclusion, this research has provided valuable insights into the relationship between mental toughness and athletic performance among student athletes of the University of Benin. The results support the idea that enhancing mental toughness can lead to improved sports performance. Concentration and self-confidence were also found to be critical factors in the performance of student athletes. The research design, which employed a correlation approach, allowed for the examination of these relationships.

## **Recommendations**

Based on the major findings and conclusion of this study, the following recommendations were made for coaches, athletes, and sports authorities:

- Mental toughness training should be incorporated into the regular training programme of student athletes. These programs can help athletes develop the mental skills required to enhance their performance.
- Concentration and Self-Confidence Workshops: Athletes should be provided with opportunities to attend workshops and psychology sessions focusing on concentration and self-confidence. These sessions can assist in strengthening these crucial aspects of mental toughness.
- Further Research: Future research can explore additional psychological factors and their impact on athletic performance. Such as motivation, resilience and emotional control,

Investigating the effectiveness of various mental toughness training methods would also be beneficial.

- Longitudinal Studies: Longitudinal studies tracking the development of mental toughness and its influence on performance over an extended period can provide deeper insights.

### **Suggestions for further research**

The study only covered University of Benin student athletes. Further research should be carried out on states and national athletes as well as student athletes in other universities.



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**APPENDIX I**

**DEPARTMENT OF HUMAN KINETICS AND SPORTS SCIENCE,**

**FACULTY OF EDUCATION**

**UNIVERSITY OF BENIN, BENIN**

## **QUESTIONNAIRE**

Dear Respondent,

I am a student of the above named department conducting a study on the Influence of Mental toughness as correlates of athletic performance among student athletes in the University c of Benin. I therefore solicit for your cooperation by responding sincerely to this questionnaire. All responses are purely for research purpose only and will be treated as confidential.

Kindly respond to all question items honestly and endeavour to provide answers to each of them.

Thank you for your cooperation.

### **SECTION A**

Instruction: Please tick ( ) the column that best represents your response appropriately

Gender: Male ( ) Female ( )

Level: 100 ( ) 200 ( ) 300 ( ) 400 ( ) 500 ( ) 600 ( )

Age: 18-22 years ( ) 23-27years ( ) 28-32 years and above ( )

Sport participated: Athletics ( ) Football ( ) Volleyball ( ) Handball ( ) Basketball ( ) Tennis ( )

Others: please specify.....

KEYS: SA= Strongly Agreed, A= Agreed, SD= Strongly Disagreed, D= Disagreed

SN	Mental toughness and sports performance	SA	A	D	SD
1.	I have unshakable self-belief in my athletic abilities				
2.	I have an inner arrogance that makes me believe I can achieve anything I set my mind to				
3.	I love the pressure of competition				
4.	I know when to celebrate success but also know when to stop and focus on the next challenge				
5.	I have a killer instinct to capitalize in the moment when I can win				
6.	Outside my sport, I am able to make the right decision under pressure				
7.	I remain in control and not controlled				
8.	I believe in the phrase “it is not over until it’s over”				
9.	I know I can achieve my goals in my sport				
10.	I am able to bounce back from mistakes or errors				
	<b>Concentration and sports performance</b>				
11.	Student athletes focus on technique and proficiency				
12.	Student athletes focus on process rather than outcome				

13.	Student athletes discuss, think through and rehearse strategies				
14.	Student athletes interpret pressure as a positive challenge				
15.	Student athletes adopt a “just do it” mind set				
	<b>Self-confidence and sport performance</b>				
16.	I have the ability to perform productively and proficiently				
17.	I have self-belief to successfully complete a task				
18.	I readily accept new and difficult projects or roles				
19.	I am more assertive and				
20.	I take charge of a situation and make presence felt				
21.	I fail to see my own weakness				
	<b>Sport performance questionnaire</b>				
22.	Compared to past weeks, my performances has improved in competitions				
23.	As a result of continuous training, I have mustered skills and techniques				
24.	I still do well when exhausted and in unfitting mental and physical conditions				

25.	When I'm playing, usually nothing distract me				
26.	During performance, I can identify my errors				
27.	During competitions, I have the ability to read the game				
28.	I have respectful behavior both in success and failure				
29.	I attend in time to the training and competition				
30.	I am so drowned in the game that sometimes I forget the passage of time				
31.	I perform well in places which I am not accustomed to				
32.	In performing the skill, I am very careful				
33.	Usually, I correct my errors in the next performance				
34.	I respect my competitors				
35.	During the season, I maintain my physical fitness				
36.	Training is interesting and enjoyable to me				
37.	I focus first on playing the game				
38.	The speed of my technique is appropriate				
39.	I can recognize the errors of other players				
40.	I respect my sports and it's rules				

41.	In most games, I feel everything				
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## APPENDIX II

GET

```
FILE='C:\Users\user\Documents\Marioghaeanalysis.sav'.
```

```
DATASET NAME DataSet1 WINDOW=FRONT.
```

GET

```
FILE='C:\Users\user\Documents\Marioghaeanalysis.sav'.
```

```
DATASET NAME DataSet2 WINDOW=FRONT.
```

```
COMPUTE mental_toughness=SUM(iTEM1 TO ITEM10).
```

```
EXECUTE.
```

```
COMPUTE sports_performance=SUM(iTEM22 TO ITEM41).
```

```
EXECUTE.
```

```
CORRELATIONS
```

```
/VARIABLES=mental_toughness sports_performance
```

```
/PRINT=TWOTAIL NOSIG
```

```
/STATISTICS DESCRIPTIVES
```

```
/MISSING=PAIRWISE.
```

## Correlations

**Descriptive Statistics**

	Mean	Std. Deviation	N
mental_toughness	34.0661	4.71652	121
sports_performance	68.7025	8.24282	121

**Correlations**

		mental_toughness	sports_performan ce
mental_toughness	Pearson Correlation	1	.934**
	Sig. (2-tailed)		.000
	N	121	121
sports_performance	Pearson Correlation	.934**	1
	Sig. (2-tailed)	.000	
	N	121	121

\*\* . Correlation is significant at the 0.01 level (2-tailed).

```
COMPUTE concentration=SUM(ITEM11 TO ITEM15).
```

```
EXECUTE.
```

```
CORRELATIONS
```

```
/VARIABLES=sports_performance concentration
```

```
/PRINT=TWOTAIL NOSIG
```

```
/STATISTICS DESCRIPTIVES
```

```
/MISSING=PAIRWISE.
```

## Correlations

### Descriptive Statistics

	Mean	Std. Deviation	N
sports_performance	68.7025	8.24282	121
Concentration	17.4298	2.28702	121

### Correlations

		sports_performan ce	concentration
sports_performance	Pearson Correlation	1	.776**

	Sig. (2-tailed)		.000
	N	121	121
Concentration	Pearson Correlation	.776**	1
	Sig. (2-tailed)	.000	
	N	121	121

\*\* . Correlation is significant at the 0.01 level (2-tailed).

```
COMPUTE self_confidence=SUM(ITEM16 TO ITEM21).
```

```
EXECUTE.
```

```
CORRELATIONS
```

```
  /VARIABLES=sports_performance self_confidence
```

```
  /PRINT=TWOTAIL NOSIG
```

```
  /STATISTICS DESCRIPTIVES
```

```
  /MISSING=PAIRWISE.
```

## Correlations

### Descriptive Statistics

	Mean	Std. Deviation	N
sports_performance	68.7025	8.24282	121
self_confidence	20.8430	2.86940	121

### Correlations

	sports_performan ce	self_confidence
sports_performance      Pearson Correlation	1	.685**

	Sig. (2-tailed)		.000
	N	121	121
self_confidence	Pearson Correlation	.685**	1
	Sig. (2-tailed)	.000	
	N	121	121

\*\* . Correlation is significant at the 0.01 level (2-tailed).

#### REGRESSION

```

/DESCRIPTIVES MEAN STDDEV CORR SIG N

/MISSING LISTWISE

/STATISTICS COEFF OUTS R ANOVA CHANGE

/CRITERIA=PIN(.05) POUT(.10)

/NOORIGIN

/DEPENDENT sports_performance

/METHOD=ENTER Gender mental_toughness.

```

## Regression

### Descriptive Statistics

	Mean	Std. Deviation	N
sports_performance	68.7025	8.24282	121
Gender	1.3719	.48532	121
mental_toughness	34.0661	4.71652	121

**Correlations**

		sports_performan ce	Gender	mental_toughness
Pearson Correlation	sports_performance	1.000	.142	.934
	Gender	.142	1.000	.215
	mental_toughness	.934	.215	1.000
Sig. (1-tailed)	sports_performance	.	.060	.000
	Gender	.060	.	.009
	mental_toughness	.000	.009	.
N	sports_performance	121	121	121
	Gender	121	121	121
	mental_toughness	121	121	121

**Variables Entered/Removed<sup>a</sup>**

Model	Variables Entered	Variables Removed	Method
1	mental_toughness , Gender <sup>b</sup>	.	Enter

a. Dependent Variable: sports\_performance

b. All requested variables entered.

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.936 <sup>a</sup>	.876	.874	2.92336	.876	418.023	2	118	.000

a. Predictors: (Constant), mental\_toughness, Gender

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7144.860	2	3572.430	418.023	.000 <sup>b</sup>
	Residual	1008.429	118	8.546		
	Total	8153.289	120			

a. Dependent Variable: sports\_performance

b. Predictors: (Constant), mental\_toughness, Gender

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	13.726	1.977		6.944	.000
	Gender	-1.038	.563	-.061	-1.843	.068
	mental_toughness	1.656	.058	.947	28.578	.000

a. Dependent Variable: sports\_performance