Mental Toughness and Stress Tolerance in Elite and Beginner Level Athletes

A thesis submitted in the partial fulfilment of the requirement of the degree of

MASTERS OF ARTS

IN

PSYCHOLOGY

SUBMITTED BY :

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UNDER THE SUPERVISION AND GUIDANCE OF

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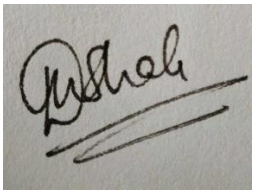
CERTIFICATE

This is to certify that the thesis entitled, 'Mental Toughness and Stress Tolerance in Elite and Beginner level athletes' is being submitted in partial fulfilment of requirements for the award of the degree of **Master of Arts in Psychology**, presented in the **Thapar School of Liberal Arts & Sciences, Thapar Institute of Engineering and Technology, Patiala** is a bonafide work carried out under the supervision of Dr. Santha Kumari, Professor & Program Chair, Thapar School of Liberal Arts & Sciences, Thapar Institute of Engineering and Technology, Patiala and Dr Sarika Alreja, and that no part of this project has been submitted for the award of any other degree.



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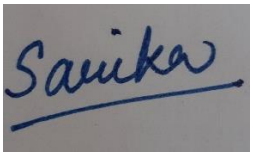

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CANDIDATE'S DECLARATION

I hereby declare that the work presented in this thesis entitled, 'Mental Toughness and Stress Tolerance in Elite and Beginner Level Athletes' submitted in partial fulfillment of requirements for the award the of the degree of Master of Arts in Psychology, presented in the Thapar School of Liberal Arts & Sciences, Thapar Institute of Engineering and Technology, Patiala, is an authentic record of my work carried out under the supervision and guidance of Dr. Santha Kumari, Professor & Program Chair, Thapar School of Liberal Arts & Sciences, Thapar Institute of Engineering and Technology, Patiala and refers other researchers' work which are duly listed in the reference section.

The matter embodied in this thesis has not formed the basis for awarding any other degree at this or any other university.

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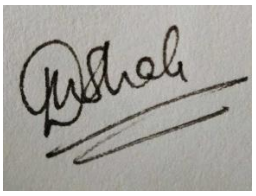

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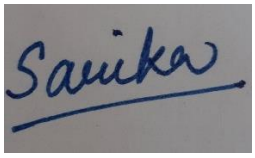

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Abstract

Background and aim: The psychological variables of mental toughness and stress tolerance of athletes across different genders and experience levels have been of interest to researchers and it would be interesting to do a study studying these variables with a heterogenous pool of athletes from different experience levels and of different genders. This study aims to do exactly that.

Methodology: Athletes (N=132) were selected from both genders (M=70, F=62) and divided into two experience levels i.e. beginner (N=66, M=33, F=33) and elite (N=66, M=37, F=29). Tools: They were administered the MTQ48 for studying the mental toughness variable and then were tested using the Determination Test on the Vienna Test System for finding out their reactive stress tolerance.

Results & conclusions: The results indicate that elite female athletes had the highest scores in 'correct (reactive stress tolerance)' and 'omitted (ability to sustain attention)' variables of the DT. Elite males had the highest scores for the 'incorrect (ability to concentrate)' Significant effects of experience were observed for 'incorrect' and significant gender differences were observed in 'mental toughness'. Elite male athletes had the highest scores in mental toughness as well.

Keywords: mental toughness; stress tolerance; elite; beginner; gender; determination test;

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Chapter 1
Introduction

1.1 Mental Toughness

Mental toughness is a fairly novel concept and it is at a very nascent stage in its conception and assessment tools. There have been different definitions of Mental Toughness given by different scientists. Mental toughness is defined by some leading sports psychologists as “having the natural or developed psychological edge that enables you to: generally, cope better than your opponents with the many demands (competition, training, lifestyle) that sport places on a performer; specifically be more consistent and better than your opponents in remaining determined, focused, confident, and in control under pressure.” (Jones et al, 2002) Another psychologist Jim Loehr defined it as “The ability to consistently perform at the upper range of your capabilities, regardless of competitive circumstances.” Another one defines it as “the personality trait which determines in large part how people deal effectively with challenges stressors and pressure… irrespective of circumstances.” (Clough & Strycharczyk, 2002)

Two primary theoretical foundations can be found, both of which come from health psychology: Resilience is a passive term that entails commitment and control. Hardiness (Kobasa): Commitment, control, and challenge; creator of the term; enhancing the concept of resilience by adding a more positive and proactive component.

The most popular definition of resilience is "the capacity to bounce back quickly from adversity, setback, or change." According to researchers, a person's resilience depends on their accurate event assessment; capacity to recognise choices and their adaptability in response; internal motivation to do activities on schedule. Resilience may be developed by thinking optimistically about the issue or task, as in "I can still do it" in the face of difficulty. Concentrating on what is under our control rather than what is not.

Considering the different definitions provided for mental toughness, we can say that mental toughness is a quality that enables people to consistently work through challenges and still be determined, focused and dedicated to one’s goals. Although mental toughness is not limited to any specific field, and it is important in different ways in day to day life and different professions in different ways as well, it becomes even more important in sports, where the results and assessments are always tangible, perceivable and present before you at all times.

This concept started gaining importance in Sports Psychology when Sports psychologists started emphasising on this as a quality important for sustaining in the field of sports.

There are various concepts under Mental toughness that conceptualise this in much more detail. There are four main concepts within mental toughness – Confidence, Control, Commitment and Challenge.

'Confidence' in itself is about how confident one feels within oneself and otherwise about things out of their control as well. If the unexpected has an impact on how they view themselves and their capabilities. Confidence has two subscales underneath it - 'Abilities' and 'Interpersonal'. 'Confidence in Abilities' is something that is concerned with ones faith in one's own capacities and abilities. This is when one feels like they have what it takes to show up and work towards something.

'Control' is essentially the degree to which a person feels in control of their life is referred to as control. There are two subscales under this namely – Life control and Emotional Control. Some people have the impression that they have a significant amount of control over their workplace, that they can affect change. Others, however, believe that they have no control over how things will turn out. They lack self-control and are powerless to affect either themselves or others. This implies, for instance, that at one end of the spectrum, people believe their input truly counts and are compelled to contribute fully. On the other hand, there are others who think their contribution is unimportant and hence not participate as much as they could. It may be inferred that one can deal with many things at once and the other cannot. The former are able to control their anxiety and are less likely to let others know how they are feeling. They believe they can change things and that their ambitions won't be stopped.

'Commitment' is the amount to which a person is likely to stick with a goal or job assignment. The extent to which they remain focused on their objectives varies amongst people. Some people could become bored easily or turn their focus away from one aim in favour of another, while others might be more inclined to stick with it. Some are able to handle and complete tasks when pressed with strict and unrelenting deadlines.

'Challenge' is the way each person approaches a task. Problems and challenges can be viewed as opportunities by some people, while threats may be perceived as chances by others. This concept gauges how much a person is likely to see an opportunity in a difficulty. Some may deliberately seek out hard circumstances for self-improvement, whilst some others may steer clear of them out of dislike to work or fear of failure. So, for instance, people who thrive in

constantly changing circumstances are found at one end and on the other hand, there are others who would much rather work in order to limit their exposure to change and the challenges that go along with it.

The goal of mental toughness research is to better understand how two people with comparable skill levels, experience levels, and developmental backgrounds respond to pressure and stress, with one giving in to it and performing poorly and the other thriving under it and succeeding (Clough & Strycharczyk, 2012). While there are many different definitions of mental toughness, they all have the same characteristics in characterising the attitudes, behaviours, cognitions, and emotions that enable someone to achieve their objectives and succeed when faced with challenges that result in stress of some kind. High levels of self-motivation, self-assurance, and belief that one's actions have a direct impact on one's life outcomes are all characteristics of people who are considered to be mentally tough (Crust & Clough, 2005; Jones, Hanton, & Connaughton, 2002). These people are also said to have an internal locus of control (Crust & Azadi, 2010).According to research (Nicholls, Polman, Levy & Backhouse, 2008), mental toughness has a positive correlation with optimism and a negative correlation with pessimism. Persona traits that correlate with mental toughness include optimism, adaptability, coachability, and perfectionism. They also exhibit effective coping mechanisms when dealing with demanding, stressful surroundings and circumstances (Drees & Mack, 2012; Weissensteiner, Abernethy, Farrow, & Gross, 2012).

Mental Toughness can also be cultivated and nurtured using different strategies and it is not something that can only be inherent. It can be nurtured as well.

1.2. Stress Tolerance

According to the APA, stress tolerance is the capacity to withstand pressures and strains and the consequent ability to function effectively and with minimal anxiety under conditions of stress. Stress tolerance is something that is relevant to the modern world and everyone in it because levels of stress are at an alarmingly high rate. The ability to tolerate and manage stress effectively is undermined and not recognised. It is something that can be extremely enabling if one is one a high end of the scale and can be difficult to get by if one is on the lower end of the scale. It is becoming increasingly important to find ways to manage stress and to cultivate an effective strategy and an appetite for managing the random order of events that we face each day. This becomes an even more important quality if one is put in an environment which is fast paced and expects high performance level.

Stress tolerance as a general term means the ability to manage stress and stressors, however, reactive stress tolerance, is defined as the ability of an individual to react quickly and accurately in a situation where he or she is overstretched (Neuwirth & Benesch, 2012). In this paper, when we refer to stress tolerance, we mean the latter one – reactive stress tolerance. Stress tolerance is an essential quality to be developed in an athlete because the world of sports is extremely unpredictable and there is great room for spontaneity. In all kinds of sports, there is basically a spontaneous situation and spontaneous reaction taking place. Since all of this is happening within a stipulated time during a match, and within the rules of the game, it becomes essential for the athlete to not only work on the technicalities of the sport and the skill, but also on the manner in which the athlete approaches and perceives this spontaneous order of events during the match.

The athlete will be able to perceive the ongoing events accurately and make an informed evaluation of the on-going scenario on the field only if they are able to think and process their thoughts clearly. This is not possible if they have too many things going on in their mind and if they are extremely aroused and chaotic in their minds. This is only possible if there is a capacity to be able to understand the situation on the field of play, be able to react quickly and appropriately while evaluating what is going on and deciding what should be the plan of action in response to the constantly changing events on the field. This is essentially their stress tolerance. The ability to react quickly and appropriately even if there is randomness of events and spontaneity involved and still be able to persist for the timespan of the competition.

Additionally, another important factor within stress tolerance, apart from what has been discussed above, is that of 'focus.' A quick, accurate reaction along with being able to persist and focus on the game would summarise all aspects of stress tolerance. Focus becomes essential because without it, the athlete will not be able to make any conclusive decision or make a confident move. Focus becomes important not only in combat sports but all kinds of sports. Focus is what directs our attention and our skill together for a good performance. So, focus is an essential part of stress tolerance as well.

Stress tolerance is not something that someone is born with, it is also an acquired ability/capacity and can be developed and ameliorated. At its core, this is decision making. There are multiple aspects that come into play before an athlete makes a decision for a move and it is not just this capacity that determines that, it is also what has happened in practice and

the months leading up to the competition. This becomes more important in combat sports as to which move to make, when and how to execute it.

Along with all the technicalities of what goes into deciding a course of action on the field of play, we need to underline the psychological factors of the athlete as well. Intense and extreme situations of the field can easily push an athlete to a point where it becomes impossible to decide and an athlete can lose control and autonomy of their actions. Hence the psychological state and well-being of the athlete will also have an impact on the stress tolerance and the reactive stress tolerance of the athlete which will in turn affect their performance. This depends on previous experience and other psychological aspects like confidence within oneself as well.

Stress tolerance has been regarded as an important attribute in sports as it enables an athlete to persist and perform well even in the face of constant, competing stimuli that attempts to not only distract but also affect the psychological balance and mental capacity of the athlete to respond especially in stressful or peak moments of the game. This attribute enables one to make quicker and more effective and efficient decisions and hence enhances the play and performance of the athlete.

There are various ways to measure this attribute in sport but the one used the most when it comes to measuring stress tolerance in terms of cognitive abilities, Determination Test from the Vienna Test System is used the most. This is a complex time controlled task where the athlete is presented with different auditory and visual stimuli indicating the usage of auditory, visual and motor responses corresponding to the presented stimuli and the athlete has to respond to these stimuli.

Chapter 2

Review of Literature

2.1. Mental Toughness

Cowden (2016) conducted a study which was a review of the previous studies conducted on mental toughness and other attributes such as competitive standards, achievement level and sports performance. The selected articles were of the recent decade and included the key words such as mental toughness, sports performance, athletes, sports events, competition. Majority of the articles were about mental toughness and achievement levels, and mental toughness and performance levels. It was found that about 88% of the studies that were included found a link between mental toughness, achievement and performance level. They found that the more mentally tough the athletes were, they were able to achieve more and higher and perform better at their respective sports. They also found that mental toughness attributes varied in different sports and that different kind of mental toughness was required for different kinds of sports.

Another study by Han wu et al (2021) which was a cross-sectional study conducted with 101 college students in Taiwan. In this study, dispositional mindfulness, mental toughness and psychological skills were studied in relation with the athletes sports performance. This study wanted to understand the role of dispositional mindfulness along with mental toughness and psychological skills in performance. They found a positive correlation between dispositional mindfulness, psychological skills and mental toughness. This could be interpreted as these factors being positively correlated enhanced athlete performance and that athletes with these attributes performed better.

Another study by Chen and Cheeseman (2013) examined the level of mental toughness in male mixed martial arts players in Teeside, England. They categorized the mixed martial arts players into three categories – amateur, semi-professional and professionals (N = 136). These groups were then assessed on their mental toughness using PPI and SMTQ. The results were that the professional players were high on mental toughness as compared to the amateurs. They were also high on other traits such as confidence, determination and positive cognition. They however found that amateur players scored high marginally as compared to the semi-professional players on the PPI inventory. But largely, the conclusive results stated that the professional players scored by more than 10% on these attributes including that of mental toughness as compared to the amateur group.

In a review of studies by Guszkowska and Wojcik (2021), they shortlisted 18 papers between 2000 and 2020 using the keywords mental toughness, performances, results, outcomes, competition. They found that the relationship between mental toughness and sports results and performance levels was positively correlated in 16 papers. However, from the remaining two papers, in one of them they found that there was no such relationship when it came to equestrian and Alpine skiing athletes. While in the other one they found that with basketball players, mental toughness did not necessarily correlate with sports performance but it was an important predictor of the same. This review covered the usage of various different kinds of assessment tools for mental toughness including PPI, PPI-A, MTQ, SMTQ, etc.

In a study conducted by Elbadri et al (2017) in Egypt, they selected 126 athletes (both males and females) from different sports such as soccer, basketball, volleyball, athletics and swimming and they assessed their mental toughness using SMTQ and also validated the Egyptian version of SMTQ. In this study however, the results were not that straightforward. They found that mentally tough athletes did have the qualities of high levels of confidence, control and regulation. However, it largely depended on personal factors and the way the athlete is able to manage negative energy during play and neutralize it. There are also other factors taken into account such as the coach, the fear of occurrence of injury, inattention due to high arousal and inattention. This study concluded that for practical purposes where training for mental toughness is intended, that they must take these more complex factors into account.

A study conducted by Yadav (2014) in Uttar Pradesh, examined mental toughness between national level female athletes who played volleyball (N = 12) and national level female athletes who played kabaddi (N = 24). The results showed that there was a significant difference between the mean mental toughness scores of the two groups. Athletes who played volleyball had a significant higher mental toughness mean as compared to the athletes who played kabaddi. This difference was attributed to the difference in the nature of both the sports.

In another interesting study conducted by Bawre and Venugopal (2020), they examined gender differences in mental toughness among national tribal sportspersons (N = 80, F = 40, M=40) in Chattisgarh. They were assessed using a mental toughness tool prepared by Tiwari (2007). Interestingly but not surprisingly, in this study it was found that the mental toughness mean of male athletes was higher than that of female athletes. This difference was attributed to the socialization of both genders and the conditioning of both genders in the tribal set up. It was

also attributed to the vastly different gender roles that dictate the acceptance or rejection of these attributes among men and women.

2.2. Stress Tolerance in Athletes

In a study conducted by Ong (2017) in Singapore, the reactive stress tolerance of the national level athletes (N=133) was compared according to gender, sport type and competition level. The Determination test of the Vienna Test System was used to assess the stress tolerance. The results of this study indicate that female athletes had better reactive stress tolerance than the male athletes, athletes of higher competitive level had higher stress tolerance than athletes of lower competitive level and open skilled athletes (rugby, badminton, judo) performed better than closed skill athletes (archery, dragon boat, swimming). The results in terms of gender have contrasted with previous literature and the possible reason for this is the difference in culture and nationality which directly affect the socialization and social conditioning of the athletes.

Another recent and interesting study is a study conducted by Ferreira (2021) in Brazil with national level Judo athletes (N=34, F=17, M=17). In this study as well, Determination test of the Vienna Test System was used to assess reactive stress tolerance. They considered four variables under this – complex reaction time, no. of correct, incorrect and omitted responses. The number of incorrect and omitted had significant differences in terms of gender with females performing better, however, no significant differences were observed in the number of correct responses and reaction time. This study's results show that the results for reactive stress tolerance were fairly homogenous.

A study conducted by Patocs et al (2016) with Hungarian elite fencers assessed their reactive stress tolerance and personality. This study also used the Determination Test for assessing reactive stress tolerance and the Character inventory for assessing personality. They divided the fencers into three categories that of Mastery level, Talented and non-fencers. Their findings show that mastery level athletes had better stress tolerance as compared to non-athletes. They also found that males were less sensitive and less reward-dependent than females. Significant differences in terms of sports proficiency, were also found in other psychological attributes that they measured like self-control, self-congruence, determination, lust for revenge. One of their findings that the reactive stress tolerance was associated with determination and self-congruence is intriguing.

In a rather interesting study conducted by Kiss (2019), they examined various performance indicators and psychological factors such as dynamic, complex, open skills, decision making

and continuous adaptation among young and adult Hungarian handball players (N = 92, M=45, F=47). They used Vienna Test System to assess the decision making, reactive stress tolerance, attention and concentration attributed of the athletes. They found significant gender differences when it came to decision making and reactive stress tolerance. Women reacted significant more to stimuli (correct, incorrect) as compared to men, although the correctness is not a factor here. Additionally, in terms of ignored (omitted) stimuli, women were significantly higher than men. The younger team reacted to more stimuli than the older team but similar to previous results, there was no significant difference in the correctness of the responses. It was observed that players in the position of goal keepers and play makers reacted quickly and more to stimuli regardless of the response but players in the pivot positions reacted lesser but also had more correct responses. This was very intriguing because it tells us about how relative these attributes are depending upon the position of the athlete and the approaches the athletes have to take in different roles.

A study conducted by Pahan (2013), examined the cognitive abilities of young tribal and non-tribal sports persons in Jharkhand (N = 200, M = 100, F = 100). They examined visual perception, long term focused attention, logical reasoning ability, reaction ability (motor speed) and reactive stress tolerance of the athletes. They used Tateens 2 test set from the Vienna Test System for assessment. This included Determination test and the entire test set for one athlete lasted 65 minutes. The findings suggested that tribal males have better focused attention and visual perception as compared to non-tribal males. Similarly, tribal females had better and faster motor speeds and reactive stress tolerance as compared to non-tribal females. No significant gender difference was found. They attributed the differences found to the differences in the large age group selection as a younger athlete's cognitive abilities may not be as well established. There were also differences in other cultural attributes of the athletes as well as sleeping patterns and the timing of the tests.

In conclusion, there have been studies conducted with mental toughness and stress tolerance which have been experimental as well as comparative in nature. However, the findings have been varied with different population samples engaged in different kinds of sports. Although most findings support the idea that mental toughness is higher in more experienced athletes and stress tolerance is higher in more experienced athletes. Gender differences have also been found but are varying in different studies. Some indicate that women have a higher stress

tolerance as compared to men. Some indicate that men are mentally tougher than women. However, these findings are not conclusive.

Chapter 3

Research gaps, Objectives, Hypotheses

3.1. Research gaps

Studies done in this area are mostly examining a relationship between two variables and their effect on performance. Many studies under sports psychology are focused on pre and post assessment after introducing an intervention. The studies that are there that examine the effects of experience on mental toughness and stress tolerance are scarce and very few are based in India. The studies in India are rare and done with very homogenised samples from a particular geographical area or a particular cultural background playing one sport or so. This limits the generalizability. This research not only studies the effect of gender and experience on mental toughness and stress tolerance but does so with national level Indian athletes from all over India. This study examines all aspects of stress tolerance using the Vienna Test System which is a more robust means to measure the attribute.

3.2. Objectives

The objectives of this study are:

1. To find out if there is a relationship between an athlete's level of experience and gender on mental toughness.
2. To find out if there is a relationship between an athlete's level of experience and gender on stress tolerance.

3.3. Hypotheses

H_1: There will be a significant difference in mental toughness between beginner and elite level athletes.

H_2: There will be a significant difference in mental toughness between male and female athletes.

H_3: There will be a significant difference in stress tolerance between beginner and elite level athletes.

H_4: There will be a significant difference in stress tolerance between male and female athletes.

Chapter 4

Methodology

4.1. Sample

The total sample was of 132 participants. It consisted of 70 males and 62 females across the two categories – elite and beginner level athletes. The participants were divided equally among the two experience groups i.e. 66 participants in each Elite level and Beginner level groups. The age range of Elite male athletes was that of 23-33 years (Mean age = 24) and of elite female athletes was also that of 23-33 years (Mean age = 22). The age range of beginner male athletes was that of 14-23 years (Mean age = 18) and of beginner female athletes was that of 13-21 years of age (Mean age = 16 years).

Elite level athletes were recruited on the basis of their participation in the National Camp. Beginner level athletes were recruited on the basis of their participation in the training camps for beginners.

4.2. Research Design

A between subjects design was used in this study.

A 2 (Gender: Male, female)X 2 (Level Experience: Beginner, Elite) factorial ANOVA was used.

Independent variable: Gender and Experience

Dependent variable: Stress tolerance and Mental toughness

4.3. Statistical Analysis

Microsoft Excel and SPSS were used for data analysis. A two way MANOVA was computed for the data.

4.4. Tools used

1. Mental Toughness Questionnaire 48: This is a self-report questionnaire that measures the Mental Toughness of a person. This scale was developed by Peter Clough, Dr. Keith Earle and Doug Strycharczyk.

2. Vienna Test System: This is a computerized test system for conducting various different assessments. This was developed by Schuhfried company in the 1980s. Here, we have used the 'Determination test' from the Vienna test System for assessing stress tolerance. Determination test: Determination test is a test that the Vienna Test System provides. This test essentially includes stimuli presented in forms of auditory and visual stimuli in a time controlled test. The stimuli are unplanned and extremely random. The speed of the stimuli also varies in the stipulated time frame. There is a long form and a short form. In this study, we have used the short form namely DT S1 (six minutes). This includes first two minutes of trial followed by the next four minutes of the actual test. They key variables that we considered were the correct, incorrect and omitted responses in order to study reactive stress tolerance.

4.5. Procedure

The study was conducted at a sports institute. The athletes were called and seated in a well lit room. After taking their consent, they were given instructions for filling the questionnaire – MTQ-48. The questionnaire was administered to them. Once they filled the questionnaire, they were then introduced to the Vienna Test System. They were given instructions for the Determination Test. A trial round of two minutes took place in which they had to perform accurately. After they successfully completed the trial round, the actual test of four minutes took place. The participants' scores were recorded after successful completion of the test.

After all the participants were administered both the assessments, the responses were collected and scoring was done for the questionnaire. For the Determination Test, the scores were automatically computed by the VTS. The results were then calculated using SPSS 22.0.

4.6. Instructions and Precautions

When the participants were seated, it was made sure that they understood the instructions for filling up the questionnaire. The researcher was present at all times to assist the participant in case there was any confusion. When the next test needed to be administered, the researcher made sure that the participant understood what needed to be done. During the trial phase if the participant did not perform well, the athlete was made to take the trial again and only when it

was made sure that the participant understood the way they needed to respond, were they presented with the actual test.

4.7. Data Analysis:

We first computed the descriptive statistics, followed by a MANOVA (multivariate analysis of variance) which gives us the test of between subject effects in terms of all the variables involved in the study. Pillai's trace and Wilks' Lambda were also computed followed by pairwise comparisons across gender and experience.

Chapter 5

Results

Descriptive statistics were computed to find out the Mean and SD.

Table no 1. Descriptive Statistics

Descriptive statistics

	Gender	Experience	Mean	Std. Deviation	N
Correct	Male	Elite	52.02	27.04	37
		Beginner	53.66	22.77	33
		Total	52.80	24.95	70
	Female	Elite	72.17	23.49	29
		Beginner	47.96	28.11	33
		Total	59.29	28.56	62
	Total	Elite	60.87	27.28	66
		Beginner	50.81	25.54	66
		Total	55.84	26.80	132
Incorrect	Male	Elite	53.75	31.47	37
		Beginner	19.54	21.44	33
		Total	37.62	32.03	70
	Female	Elite	43.75	27.61	29
		Beginner	35.69	22.08	33
		Total	39.46	24.94	62
	Total	Elite	49.36	30.03	66
		Beginner	27.62	23.08	66
		Total	38.49	28.82	132
Omitted	Male	Elite	37.35	23.29	37
		Beginner	29.39	18.87	33
		Total	33.60	21.54	70
	Female	Elite	72.34	21.14	29
		Beginner	39.42	22.28	33
		Total	54.82	27.20	62
	Total	Elite	52.72	28.27	66
		Beginner	34.40	21.10	66

		Total	43.56	26.49	132
		Elite	176.70	22.01	37
	Male	Beginner	173.18	21.88	33
		Total	175.04	21.86	70
		Elite	167.37	22.40	29
MT	Female	Beginner	163.93	15.33	33
		Total	165.54	18.88	62
		Elite	172.60	22.50	66
	Total	Beginner	168.56	19.31	66
		Total	170.58	20.99	132

Correct responses (reactive stress tolerance):

The descriptive statistics is given in table 1 and from there it can be seen that for male participants with elite experience (N=37), the mean performance is 52.02. The standard deviation is 27.04, which indicates that there is a wide range in performance. Beginner male participants' (N=33) mean performance is 53.66, which is slightly better than the aforementioned group. In comparison to the elite group, the standard deviation is lower at 22.77, indicating less unpredictability.

In comparison to male participants in the elite group, female participants with elite experience's (N=29) mean performance is 72.17, which is much better. A moderate variability is indicated by the standard deviation of 23.49. For beginner female participants (N=33), then mean performance is 47.96. The standard deviation of 28.11 indicates a significant amount of variation.

This indicates that the reactive stress tolerance of elite female athletes is the highest at 72.17, followed by the beginner males group at 53.66, after which the elite males group fares at 52.02 and the least mean being that of beginner females group at 47.96. This is illustrated in the graph below.

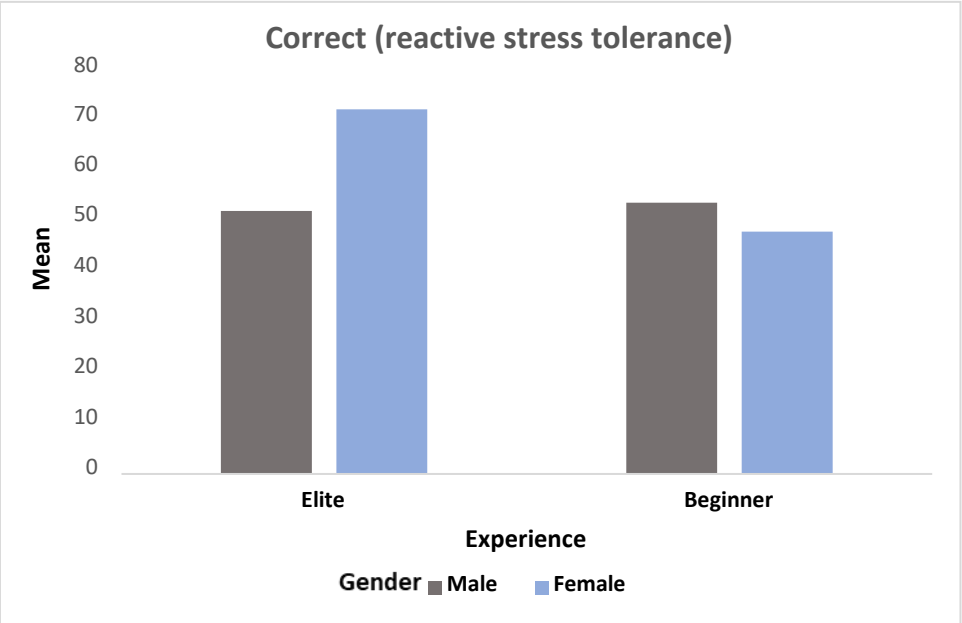

Fig. 1. Correct responses of beginner and elite athletes

Incorrect responses (ability to concentrate):

The descriptive statistics is given in table 1 and from there it can be seen that the mean performance of male participants with elite experience (N=37) is 53.75. The standard deviation is 31.47. 37 which indicates a great degree of variability. The mean performance of beginner male participants (N=33) is 19.54. The standard deviation of 21.44 indicates moderate level of variability.

The mean performance of elite female participants (N=29) is 43.75, which is less than in the 'correct' responses. The standard deviation of 27.61 indicates moderate level of variability. The mean performance of beginner female participants (N=33) is 35.69. The moderate level of variability is indicated by the standard deviation of 22.08.

This indicates that the ability to concentrate is highest in the elite males group at 53.75, followed by the elite females group at 43.75, followed by the beginners female group at 35.69 and lastly the beginner males group at 19.54. This is illustrated in the graph below.

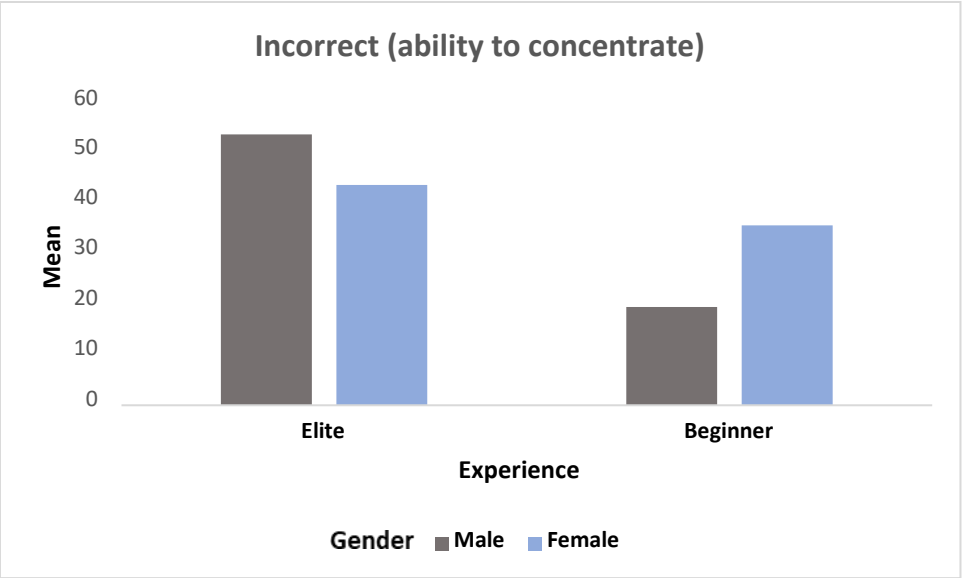

Fig. 2. Incorrect responses of beginner and elite athletes

Omitted responses (ability to sustain attention):

The descriptive statistics is given in table 1 and from there it can be seen that the mean performance of male participants with elite experience (N=37) is 37.35. The standard deviation is 23.29. The mean performance of beginner male participants (N=33) is 29.39. The standard deviation, which is 18.87, indicates that there is not much variation.

The mean performance of elite female participants (N=29) is 72.34 which is close to the mean of their performance in the 'correct' responses. The standard deviation is 21.14. The mean performance of beginner female participants (N=33) is 39.42, which is slightly better than the 'incorrect' responses. The standard deviation is 22.28.

This indicates that the ability to sustain attention is highest in the elite female athletes at 72.34. followed by beginner female athletes at 39.42, followed by elite male athletes at 37.35 and lastly by beginner males at 29.39. This is illustrated in the graph below.

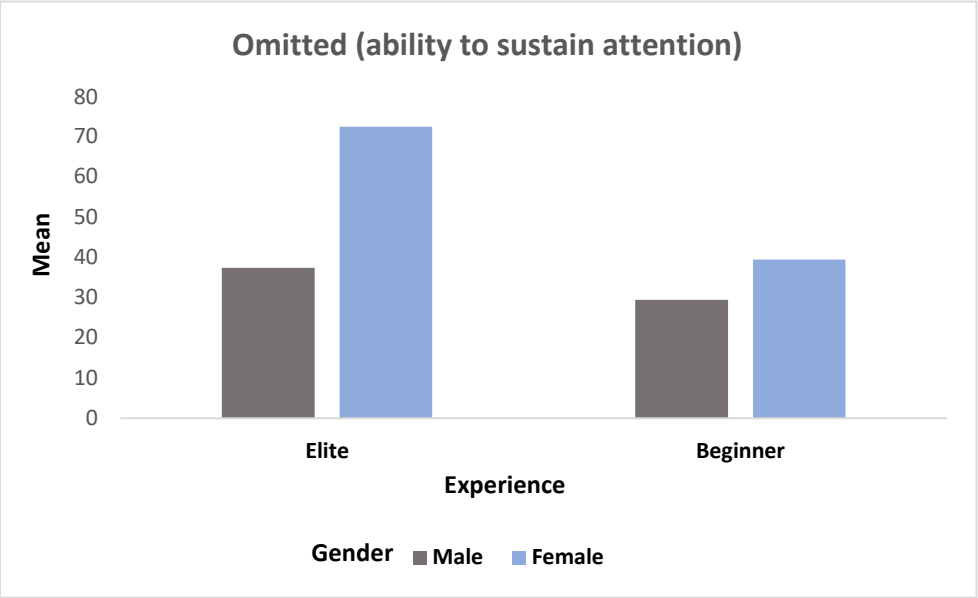

Fig. 3. Omitted responses of beginner and elite athletes

Mental Toughness:

The descriptive statistics is given in table 1 and from there it can be seen the mean performance of male participants with elite experience (N=37) is 176.70. The standard deviation is 22.01. The mean performance of beginner male participants (N=33) is 173.18. The standard deviation is 21.88.

The mean performance of female participants with elite experience (N=29) is 167.37, which is higher than the beginner female group but lower than the male elite group. The standard deviation is 22.40. The mean performance of beginner female participants (N=33) is 163.93. The standard deviation is 15.33.

This indicates that the mental toughness is highest in elite male athletes at 176.70, followed by beginner male athletes at 173.18, followed by elite female athletes at 167.37 and then followed by beginner female athletes at 163.93. This is illustrated in the graph below.

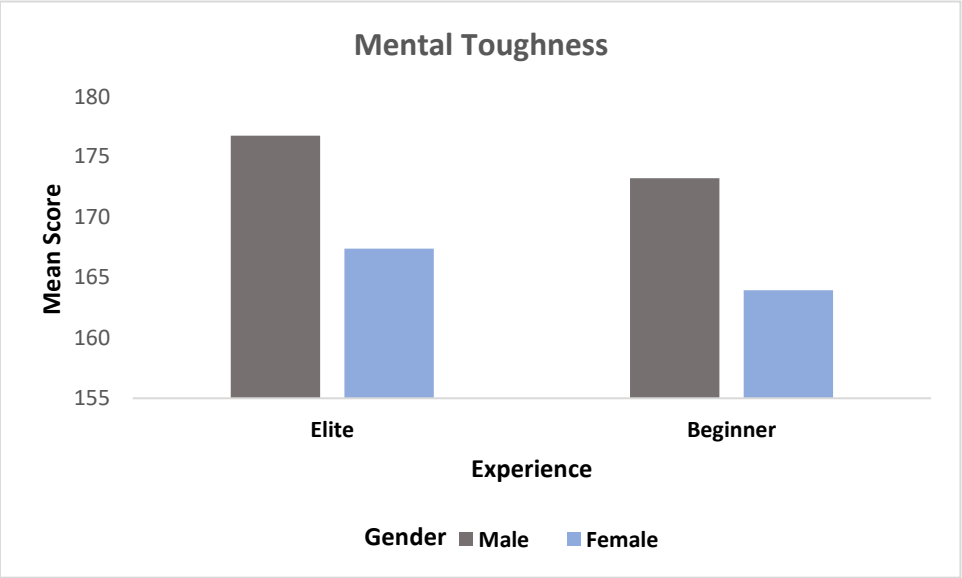

Fig.4. Mental toughness scores of beginner and elite athletes

Table no. 2. Multivariate tests

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.988	2645.001[b]	4.000	125.000	.000	.988
	Wilks' Lambda	.012	2645.001[b]	4.000	125.000	.000	.988
Gender	Pillai's Trace	.255	10.703[b]	4.000	125.000	.000	.255
	Wilks' Lambda	.745	10.703[b]	4.000	125.000	.000	.255
Experience	Pillai's Trace	.317	14.537[b]	4.000	125.000	.000	.317
	Wilks' Lambda	.683	14.537[b]	4.000	125.000	.000	.317
Gender * Experience	Pillai's Trace	.144	5.236[b]	4.000	125.000	.001	.144
	Wilks' Lambda	.856	5.236[b]	4.000	125.000	.001	.144

a. Design: Intercept + Gender + Experience + Gender * Experience

b. Exact statistic

The multivariate tests were done and the results are depicted in table 2. The results indicate the following:

As seen in table 2, the multivariate effect was significant for gender, Pillai's trace = .255, F = 10.703, df = 132, p>.000. This indicates that the dependent variable differs significantly between the genders.

As seen in table 2, the multivariate effect was relatively highly significant for experience, Pillai's trace = .317, F = 14.537, df = 132, p>.000. This indicates that the dependent variable differs significantly depending on the experience categories.

As seen in table 2, the multivariate effect of gender x experience interaction is less significant, with a Pillai's Trace = .144, F =5.236, df = 132, p>.001. Even though the effect is statistically significant (p .001), it is not as high as the main effects. In contrast to the main effects, the combined effect of gender x experience is significant but has a weaker effect on the dependent variable.

As seen in table 2, there was a significant effect of the gender on the dependent variables with Wilks' Lambda = .745, F(4,125) = 10.703, p = .000.

As seen in table 2, there was a significant effect of the experience on the dependent variables with Wilks' Lambda = .683, F(4,125) = 14.537, p = .000.

As seen in table 2, there was a significant effect of the interaction of gender x experience on the dependent variables with Wilks' Lambda = .856, F(4,125) = 5.236, p = .001.

Table no. 3. Test of Between-subject effects

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Gender	Correct	1709.49	1	1709.49	2.615	.108	.020
	Incorrect	310.06	1	310.06	.454	.501	.004
	Omitted	16600.14	1	16600.14	35.801	.000	.219
	MT	2822.64	1	2822.64	6.647	.011	.049
Experience	Correct	4168.93	1	4168.93	6.377	.013	.047
	Incorrect	14633.66	1	14633.66	21.446	.000	.144
	Omitted	13683.81	1	13683.81	29.511	.000	.187
	MT	396.77	1	396.77	.934	.336	.007
Gender * Experience	Correct	5468.80	1	5468.80	8.365	.004	.061
	Incorrect	5599.63	1	5599.63	8.207	.005	.060
	Omitted	5103.02	1	5103.02	11.006	.001	.079
	MT	.05	1	.05	.000	.991	.000
Error	Correct	83679.41	128	653.74			
	Incorrect	87339.27	128	682.33			
	Omitted	59350.92	128	463.67			
	MT	54353.34	128	424.63			
Total	Correct	505868.00	132				
	Incorrect	304449.00	132				
	Omitted	342553.00	132				
	MT	3898741.00	132				

Tests of between subjects effects were computed and the results are depicted in table 3. The main effects of the independent variable "Gender" on the dependent variables:

As seen evidently in the table 3, the effect of gender on "correct (reactive stress tolerance)" is non-significant ($F(1,132) = .108$, $p>.05$). Similarly, the effect of gender on “incorrect (ability to concentrate)” is non-significant ($F(1,132) = .501$, $p>.05$). Contrastingly, the effect of gender on “omitted (ability to sustain attention)” is significant ($F(1,132) = .000$, $p<.05$).

Similarly, the effect of gender on “mental toughness (MT)” is also significant ($F(1,132) = .011$, $p<.05$)

Additionally, as shown in the table 3, the partial eta squared values for "correct," "incorrect," and "omitted" are .020, .004, .219 i.e. they are not very high overall. Similarly, the partial eta squared value for “mental toughness (MT)” is .049 which is not low. This tells us that gender

only accounts for a small proportion of the variance for whichever variables it exerts a significant effect.

This suggests that gender has no discernible influence on correct and incorrect but it does on omitted and mental toughness.

The main effects of the independent variable "Experience" on the dependent variables:

As seen in the table 3, the effect of experience on “correct (reactive stress tolerance)” is significant ($F(1,132) = .013$, $p<.05$). Similarly the effect of experience on “incorrect (ability to concentrate)” is also highly significant ($F(1,132) = .000$, $p<.05$). Similarly, the effect of experience on “omitted(ability to sustain attention)” is also highly significant ($F(1,132) = .000$, $p<.05$).

Contrastingly, the effect of experience on mental toughness is non-significant ($F(1,132) = .336$, $p>.05$).

Additionally, the partial eta squared values of “correct,” “incorrect,” and “omitted” at .061, .060 and .079 respectively indicate a high value. Similarly, for mental toughness the partial eta squared value is .007 which is low comparatively. This shows that a substantial proportion of variance is explained by experience for whichever variables it exerts a significant effect.

This suggests that experience has a significant influence on correct, incorrect and omitted but not on mental toughness.

The interaction effect of "Gender x Experience" on the dependent variables:

As seen in the table 3, the interaction effect of gender x experience on “correct (reactive stress tolerance)” is significant ($F(1,132) = .004$, $p<.05$). Similarly the interaction effect of gender x experience on “incorrect (ability to concentrate)” is also significant ($F(1,132) = .005$, $p<.05$). Similarly, the interaction effect of gender x experience on “omitted(ability to sustain attention)” is also significant ($F(1,132) = .001$, $p<.05$).

Contrastingly, the interaction effect of gender x experience on mental toughness is non-significant ($F(1,132) = .991$, $p>.05$).

Additionally, the partial eta squared values of “correct,” “incorrect,” and “omitted” at .047, .144 and .187 respectively, which are high. For mental toughness, the partial eta squared value is .000 which is extremely low. This shows that a substantial proportion of variance is explained by interaction effect of gender x experience for whichever variables it exerts a significant effect.

This suggests that the interaction between gender x experience has a significant influence on correct, incorrect and omitted but not on mental toughness.

Table no. 4. Pairwise Comparisons (Gender)

Pairwise Comparisons

Dependent Variable	(I) Gender	(J) Gender	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
						Lower Bound	Upper Bound
Correct	Male	Female	-7.224	4.467	.108	-16.064	1.615
	Female	Male	7.224	4.467	.108	-1.615	16.064
Incorrect	Male	Female	-3.077	4.564	.501	-12.108	5.954
	Female	Male	3.077	4.564	.501	-5.954	12.108
Omitted	Male	Female	-22.512*	3.762	.000	-29.956	-15.067
	Female	Male	22.512*	3.762	.000	15.067	29.956
MT	Male	Female	9.283*	3.601	.011	2.159	16.407
	Female	Male	-9.283*	3.601	.011	-16.407	-2.159

Pairwise comparisons (Gender) were computed and the results are depicted in table 4. The findings are as follows:

As seen in table 4, regarding the pairwise comparisons for "correct," the mean difference between males and females is -7.224. The negative value indicates that, on average, females scored higher than males in this variable, although the difference is not statistically significant at the .05 level ($p = .108$).

As seen in table 4, regarding the pairwise comparisons for "incorrect", the mean difference is -3.077, this suggests that males had a slightly higher average score then females. Although, this difference is not statistically significant ($p = .501$).

As seen in table 4, regarding the pairwise comparisons for "omitted", there is a significant gender difference ($p < .001$). The mean difference is -22.512, indicating that males had, on average, significantly higher scores compared to females.

As seen in table 4, regarding the pairwise comparisons, for "Mental Toughness", there is a significant gender difference ($p = .011$). Females have significantly higher scores (mean difference = 9.283) compared to males.

Table no. 5. Pairwise Comparisons (Experience)

Pairwise Comparisons

Dependent Variable	(I) Experience	(J) Experience	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
						Lower Bound	Upper Bound
Correct	Elite	Beginner	11.282	4.467	.013	2.442	20.121
	Beginner	Elite	-11.282	4.467	.013	-20.121	-2.442
Incorrect	Elite	Beginner	21.136	4.564	.000	12.106	30.167
	Beginner	Elite	-21.136	4.564	.000	-30.167	-12.106
Omitted	Elite	Beginner	20.439	3.762	.000	12.994	27.884
	Beginner	Elite	-20.439	3.762	.000	-27.884	-12.994
MT	Elite	Beginner	3.480	3.601	.336	-3.644	10.605
	Beginner	Elite	-3.480	3.601	.336	-10.605	3.644

Pairwise comparisons (Experience) were computed and the results are depicted in table 5. The findings are as follows:

As seen in table 5, regarding the pairwise comparisons for "correct," there is a significant difference in mean scores between elite and beginner athletes ($p = .013$). The mean difference is 11.282, indicating that participants with an elite level of experience scored, on average, higher than those with a beginner level of experience.

As seen in table 5, regarding the pairwise comparisons for "incorrect", there is a significant difference in mean scores between the elite and beginner athletes ($p < .001$). The mean difference is 21.136, indicating that participants with an elite level of experience scored, on average, higher than those with a beginner level of experience.

As seen in table 5, regarding the pairwise comparisons for "omitted" variable, there is a significant difference in mean scores between the elite and beginner athletes ($p < .001$). The mean difference is 20.439, indicating that participants with an elite level of experience scored, on average, higher than those with a beginner level of experience.

As seen in table 5, regarding the pairwise comparisons for "Mental Toughness" variable, there is no significant difference in mean scores between the elite and beginner athletes ($p = .336$).

The mean difference is 3.480, suggesting that there is no substantial difference in scores between participants with different levels of experience.

Chapter 6

Discussion

The objective of this study was to make a comparative study of the differences between genders and experience level of the athletes on psychological and cognitive attributes like mental toughness and stress tolerance.

When it comes to stress tolerance, the result findings are fairly homogenous. There are three attributes under stress tolerance that were considered i.e. correct, incorrect and omitted. 'Correct' is representative of reactive stress tolerance which also means that 'correct' is representative of the accurate and timely responses that the participant could manage to give. In this attribute, there was a significant difference in the means of groups. Elite females had the highest mean followed by beginner males. However, beginner males and elite males did not have much of a difference but beginner males performed better marginally. Beginner females recorded the lowest mean in this attribute. Even though this is in line with some of the previous literature with females being better at this particular attribute, it is still contradictory with beginner females having the lowest scores. Thus for this attribute, the elite female athletes fared better than all the other groups and other groups findings are fairly homogenous. They are also in line with the study conducted by Ong in 2017. There were also no differences in the elite and beginner groups in totality as the elite females did better but the elite males did almost at par with the beginner males. This could be due to various factors that went unrecorded such as the varying timings of the test conduction for each group, the schedule that the athletes had to follow within which they only had a certain amount of time they could attribute to the testing. The between-subject tests are also in line with this, meaning that gender did not have any significant effect on the variations in 'correct' however experience did prove to have a significant effect on 'correct.'

The second attribute under stress tolerance would be that of 'Incorrect' which is essentially an ability to concentrate and focus. It is not to be confused with incorrect responses as a negatively valued variable. It stands for the times when the participant was able to respond (even if incorrectly) when faced with two competing stimuli at one time or in quick succession of one another. Basically when the participant gets confused and gives an incorrect and this is not because the task is cognitively complex but simply because the correct response of competing stimuli cannot be separated from the irrelevant reactions. So this attribute stands for the

'concentration' function. In this attribute, the elite males group had the highest scores followed by the elite females group. They were followed by the beginners females group and finally the beginner males group. The differences in the means were not marginal. The elite athletes performed better at this attribute compared to the beginner athletes. This is in line with the previous studies conducted by Ong (2017). Additionally, as reflected in the between subjects test that gender is not significantly causing any variance for 'incorrect.' However, experience was highly significant with 'incorrect' indicating that experience has a high effect on 'incorrect' (i.e. ability to concentrate) variable of stress tolerance. '

The third attribute of stress tolerance taken into consideration is 'omitted' responses. 'Omitted' essentially stands for ability to sustain attention. Omitted responses are those that are either delayed or not attempted. There is a tendency among responses to be delayed first and then followed by some omitted responses. An extremely high score on this attribute may mean that the person is not able to sustain attention on one task for a long period of time or not able to do that under stress. A low score on this would mean a high percentile rank, meaning that a person scoring low on this attribute will be able to sustain attention for a long period of time. Our results show us that the ability to sustain attention is highest in elite female athletes followed by beginner female athletes. Elite male athletes are preceded by beginner females and beginner male athletes fared the lowest. This also indicates the gender differences in this attribute. But interestingly, it also demonstrates significant differences in experience within genders. This stands in line with the results from the between subject tests which indicate that gender is significant with 'omitted, experience is highly significant with 'omitted' and the interaction between gender x experience is also highly significant with 'omitted' (ability to sustain attention). This is in line with previous literature.

The other psychological attribute in this study is mental toughness which is essentially being able to be resilient and sustain in the face of challenges. The findings of our study show us that elite males had the highest score followed by beginner males, followed by elite females followed by beginner females. This clearly indicates gender differences in this attribute but at the same time, like previous attribute, it also shows the differences in experience within genders as well. As shown by between group tests, gender had a significant effect on mental toughness, however experience did not. This indicates that the variability within mental toughness cannot be attributed to experience but can be, to gender. Thus the interaction between both is also not significant when it comes to mental toughness. Our findings are in line with previous studies (Bawre & Venugopal, 2020) in terms of gender. This could also be because of gender roles and

different socialisation processes that both males and females go through. It is also a social desirability effect that comes into the picture here. However, our findings in terms of experience are somewhat complex and contrasting with previous literature. In previous studies (Han wu, 2021) (Chen & Cheeseman, 2013) it was found that elite athletes would do better on this as compared to the beginner ones. In our study, elite athletes have scored higher in their respective gender groups but overall gender has preceded the effects of experience.

Our findings are mostly in line with the existing literature except for a few contradictions in terms of 'correct' responses and experience and mental toughness and experience. However these contradictions can be attributed to cultural differences. At the same time, other factors like the timing of the testing were varied and that could have had an effect on the performance as the athletes have their day planned out and need to be somewhere else after finishing the testing. It can also be the differences in other attributes related to sport category as well. There were athletes from varied sport categories included in the study.

In conclusion, the results indicate that elite female athletes had the highest scores in 'correct (reactive stress tolerance)' and 'omitted (ability to sustain attention)' variables of the DT. Elite males had the highest scores for the 'incorrect (ability to concentrate)' Significant effects of experience were observed for 'incorrect' and significant gender differences were observed in 'mental toughness'. Elite male athletes had the highest scores in mental toughness as well.

For the reasons mentioned above, there could be some differences in the findings as compared to the findings from the previous literature. Apart from these, our study has yielded significant results across most variables and given us some conclusive findings.

Chapter 7

Conclusions, Implications, Limitations and Future Directions

7.1. Conclusions

We found that elite female athletes performed significantly better in two out of three attributes of stress tolerance namely ‘correct’ and ‘omitted’ and were the second best in ‘incorrect’ as well. We also found that elite athletes both males and females performed significantly better in one of the attributes ‘incorrect’ as compared to the beginners. We found that males both elite and beginners had higher scores than females for mental toughness however in their respective gender groups, the elite athletes fared better than the beginner ones indicating that gender did make the major difference.

7.2. Implications

These findings imply that we need to cater to each category of athletes taking into consideration their respective challenges and we also need to take into consideration their experience. While females can be trained for developing the psychological attributes of mental toughness and ability to concentrate, males can be trained for developing the cognitive attributes of reactive stress tolerance and ability to sustain attention. Beginner athletes can be trained for developing the cognitive ability to concentrate and overall stress tolerance as well.

7.3. Limitations

The limitations of this study are that the testing was conducted at varied times of the day depending on the availability. So the timing of the testing could have been controlled. Along with that the sport type could have been controlled which could have lead us to more clarity on the results. Similarly, along with the experience, the age range within each category could have been controlled to yield more conclusive results.

7.4. Future Directions

Further research can be done in the form of including an intervention to develop these cognitive skills and psychological attributes. A pre and post assessment can be done of the athletes in terms of these attributes and their performance in sport can also be evaluated after the interventions took place. Furthermore, research with more than one data source, i.e. including the evaluation of the coach as well, along with other objective means can be added.

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Appendix A

Fig. 1. Vienna Test System

Fig. 2. Standard Panel Keyboard

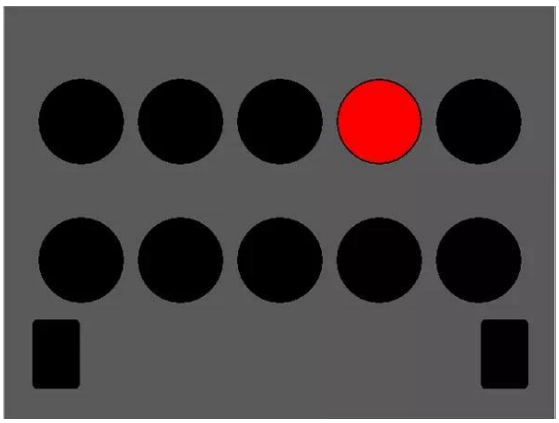

Fig. 3. Interface of Determination test

MTQ-48.

Please answer these items carefully, thinking about how you are generally. Do not spend too much time on any one item.

	1- Strongly Disagree	2 – Moderately Disagree	3- Neutral	4- Moderately Agree	5- Strongly Agree
1. I usually find something to motivate me.	o	o	o	o	o
2. I generally feel in control.	o	o	o	o	o
3. I generally feel that I am a worthwhile person.	o	o	o	o	o
4. Challenges usually bring out the best in me.	o	o	o	o	o
5. When working with other people I am usually quite influential.	o	o	o	o	o
6. Unexpected changes to my schedule generally throw me.	o	o	o	o	o
7. I don't usually give up under pressure.	o	o	o	o	o
8. I am generally confident in my own abilities.	o	o	o	o	o
9. I usually find myself just going through the motions.	o	o	o	o	o
10. At times, I expect things to go wrong.	o	o	o	o	o
11. 'I just don't know where to begin' is a feeling I usually have when presented with several things to do at once.	o	o	o	o	o
12. I generally feel that I am in control of what happens in my life.	o	o	o	o	o
13. However bad things are, I usually	o	o	o	o	o

Fig. 4. MTQ 48 – Part 1

feel that they will work out positively in the end.					
14. I often wish my life was more predictable.	O	O	O	O	O
15. Whenever I try to plan something, unforeseen factors usually seem to wreck it.	O	O	O	O	O
16. I generally look on the bright side of life.	O	O	O	O	O
17. I usually speak my mind when I have something to say.	O	O	O	O	O
18. At times, I feel completely useless.	O	O	O	O	O
19. I can generally be relied upon to complete the tasks I am given.	O	O	O	O	O
20. I usually take charge of the situation when I feel it is appropriate.	O	O	O	O	O
21. I generally find it hard to relax.	O	O	O	O	O
22. I am easily distracted from the tasks that I am involved with.	O	O	O	O	O
23. I generally cope well with any problems that occur.	O	O	O	O	O
24. I do not usually criticize myself even when things go wrong.	O	O	O	O	O
25. I generally try to give 100%	O	O	O	O	O
26. When I am upset or annoyed I usually let others know.	O	O	O	O	O
27. I tend to worry about things well before they actually happen.	O	O	O	O	O
28. I often feel intimidated in social gatherings.	O	O	O	O	O
29. When faced with difficulties I usually give up.	O	O	O	O	O
30. I am generally able to react quickly when something unexpected happens.	O	O	O	O	O
31. Even when under considerable pressure I usually remain calm.	O	O	O	O	O
32. If something can go wrong, it usually will.	O	O	O	O	O
33. Things just usually happen to me.	O	O	O	O	O
34. I generally hide my emotions from others.	O	O	O	O	O
35. I usually find it difficult to make a mental effort when I am tired.	O	O	O	O	O

Fig. 5. MTQ 48 – Part 2

36. When I make mistakes I usually let it worry me for days after.	0	0	0	0	0
37. When I am feeling tired I find it difficult to get going.	0	0	0	0	0
38. I am comfortable telling people what to do.	0	0	0	0	0
39. I can normally sustain high levels of mental effort for long periods.	0	0	0	0	0
40. I usually look forward to changes in my routine.	0	0	0	0	0
41. I feel what I do tends to make no difference.	0	0	0	0	0
42. I usually find it hard to summon enthusiasm for the tasks I have to do.	0	0	0	0	0
43. If I feel somebody is wrong, I am not afraid to argue with them.	0	0	0	0	0
44. I usually enjoy a challenge.	0	0	0	0	0
45. I can usually control my nervousness.	0	0	0	0	0
46. In discussions, I tend to back down even when I feel strongly about something.	0	0	0	0	0
47. When I face setbacks I am often unable to persist with my goals.	0	0	0	0	0
48. I can usually adapt myself to challenges that come my way.	0	0	0	0	0

Fig. 6. MTQ 48 – Part 3.