



Master's degree thesis

IDR950 Sport Management

Being mentally tough in Triathlon - Is there a need for mental training services in Ironman?

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Number of pages including this page: 64

Molde, Date 23/05/2019



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Preface

After two years studying at Molde University College, I am proud to present my master's thesis to obtain the 'Master of Science in Sport Management' degree. Following my bachelor studies in Leeds, England for three years, it was a big personal decision to uproot and head across the North Sea to live and study in Molde. Initially, moving country was a daunting prospect, however fortunately the people and city of Molde have been extremely welcoming and friendly.

Moving to Norway was motivated by more than academic opportunity, it also provided me with an excellent environment to train for and complete my dream of finishing the Ironman. It is fair say to the cold weather and mountainous terrain helps build mental toughness! Having finished the Ironman last summer in Austria, the master's thesis has allowed me the opportunity to collect my thoughts, reflect on my Ironman journey and offer closure to some extent. Writing about a topic I feel so passionately about has allowed me to become really engrossed in my master's thesis over the last six months, and I am really proud to present some fascinating interviews, insights and discussion. It is my hope that this study will help improve the service offered by coaches to other willing Ironmen and ultimately their quality of life.

I would like to take the opportunity to thank a few people. Firstly, I would like to thank my supervisor Harold Dolles who has provided me with invaluable advice and feedback along the way. Furthermore, I would like to thank him for supporting me throughout the thesis despite being away from Norway at the time of writing. Secondly, I would like to thank my family for their unwavering support. Specifically, I would like to thank them for helping to finance my stay in Norway as well as the emotional support throughout the Ironman journey – it has been quite a ride! I hope the finish line in Austria as well my upcoming graduation has and will give you great joy and special memories to treasure. Finally, I would like to thank those participants who agreed to take part in my study – without you it would have not been possible!

Fraser Sturgess

Molde, 2019.

Abstract

This study assesses the demand for mental training services amongst age-group Ironman athletes. Moreover, it seeks to explore the mental strategies used by these athletes and the relationship with mental toughness. Ultimately, the study aimed to identify the specificities of amateur Ironman athletes, the mental challenges and strategies they face and use and finally to inform coaches to help improve their service offered and subsequently the life and performance of the athletes. The study adopted a qualitative approach conducting four semi-structured interviews with four amateur Ironman athletes, as well as offering the researcher's reflection and personal experience. The results were then compared against the literature presented and a discussion was formulated.

It is clear mental training services do not meet the demand of amateur Ironman athletes. Moreover, it is clear the Ironman is unique and a race like no other. Athletes represent serious leisurists who make considerable commitments to the Ironman and coaches should adopt a soft, democratic approach to coaching seeking to understand athletes on a 1-1, personal basis. Coaches who can understand the motivations and personal emotions of their athletes coupled with the specificities of mental strategies in an Ironman setting could gain a serious competitive business advantage. This research paper helps to inform and educate coaches and seeks to spark future research on mental strategies and training services in amateur sport.

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1.0 Introduction

This chapter will provide an introduction to the master's thesis project. Firstly, background information encompassing the topic will be provided followed by a formulated research question and objectives. Lastly, the chapter will outline the structure which underpins the research project and the methods employed to ensure its undertaking.

1.1 Background

In 1978, John Collins created the Ironman; a 3.8km swim, 112km cycle and a 42.2km run with no break. The race combined the three hardest existing races on the island of Hawaii into one complete race with the winner to be named the 'Ironman'. Since the inaugural race in which only 14 participants took part, Ironman has grown exponentially. To expand, Ironman now boasts 260 events spanning over 44 countries and has become a truly global sensation. Further evidence of the rapid growth of Ironman includes but is not limited to: exceptional TV viewing figures of Ironman Hawaii of which broadcasts have been nominated for 50 Emmy awards (winning 15 as of March 2012), Avon launching an Ironman fragrance for men and its rise to the top of popular search engines ahead of its famous counterpart fictional superhero. (Bridel 2015)

In response to the rapid growth of Ironman and the supplementary services which have developed as part of the wider demand for Ironman, it is critical research is conducted to better understand the sport whilst informing both participants and practitioners working within Ironman and triathlon. Currently, a plethora of research has been undertaken focusing on the Sport's Science perspective towards Ironman and the changing notions of leisure in contemporary times (Bridel 2015). Despite the focus on the sport's science approach, there are several main streams of research encompassing the mental approach to Ironman. To expand, albeit to lesser extent, there exists some research assessing the mental approach in Ironman and more specifically the mental strategies and motivations used by endurance athletes. Furthermore, it is important to understand the historical development of sport psychology in an elite sport setting and the opportunity for a shift into amateur sports such as the Ironman with the development of 'serious leisurist's. The literature review will expand on these key themes in great detail to develop a strong understanding of the topic and underpin the study.

In contrast to a Sport's Science focus in the current body of literature, 'The limited knowledge of mental skills contradicts triathlete's strong belief that mental training is an essential part of achieving excellence' (Grand'Maison 2004). To expand, of 97% of athlete's who expressed they felt strong or very strongly in response to how important they felt mental skills were, only 37% practiced mental training and only 27% would incorporate it into their races. Schumacher et al (2016) adds that as participation rates in ultra-endurance sports like Ironman or channel swimming continue to rise, a greater demand for mental training services will arise and sports practioners must become adept in this area, transitioning from simply working in traditional sport settings.

Such a disproportionate response provides justification for the need of academic research into mental training and psychology in Ironman. It is clear that in the modern day of Ironman racing, simply a 'physical' approach to training is simplistic and a multifaceted approach is warranted. Moreover, a greater emphasis must be placed on understanding the mental struggles, strategy and approach used by participants to help improve performance and to help coaches better guide their athletes.

1.2 Research Questions

Considering the demand for a greater implementation of mental strategies into Ironman training, it is critical research is conducted to understand what fuels best practice. For example, by analysing the sub-groups of the Ironman mental challenge, we can develop a better understanding of the strategies utilised by existing ironmen which will help improve performance both in isolated stages of the race and as a whole. Furthermore, this will aid coaches to improve their service towards Ironman athletes as they can seek to offer a more comprehensive and well-rounded training plan. As such, my research question reads:

“Being mentally tough in Triathlon – Is there a need for mental training services in Ironman?”

Moreover, my sub-research questions (SRQs) are as follows:

1. Understanding age-group athletes who compete in Ironman.
2. What challenges do these athletes face and what mental strategies do they use?

3. Is there a demand for mental training services offered by coaches?

1.3 Structure

The structure of the research project is as follows: in the next chapter a literature review is provided encompassing the existing body of research provided by academic scholars and researchers assessing the historical development of sport psychology, mental toughness, its effect on performance and the mental strategies and techniques utilised by athletes.

Chapter 3 will outline the methodology which was implemented to complete the research project and chapter 4 will discuss the data collected and research findings. Finally, a discussion will be offered contextualising the research findings followed by a conclusion to review the research in its entirety.

2 Literature Review

Significant research cannot be performed without the development of a strong understanding of the current literature surrounding the topic of study (Boote & Beile 2005). As such, this Literature Review will not only examine Ironman athletes but will also touch upon other sports. To elaborate, it will also consider the individual sports within the triathlon (swimming, cycling and running) in their extremities to allow for a greater analysis of mentality in sport. This chapter will seek to understand the historical development of sport psychology and the contemporary demand in amateur sports such as the Ironman due to serious leisurist's and highly committed athletes. Moreover, it will aim to examine the existing body of research which analyses mental toughness, its effect on performance and how it is achieved through strategies, techniques and tactics.

2.1 Historical Development of Sport Psychology

Kremer & Moran (2008) provide perhaps the most detailed overview of the history and emergence of Sport Psychology. Post WW2, sport psychology slowly began to break through into sport literature. As early as 1968, Dr Miroslav Vanek undertook a psychological screening assessment involving the Czech national team at the Olympic Games, and coupled with Vanek's endeavour to create the International Society of Sport Psychology (ISSP) a few years earlier, the 1960s are considered as the birth of Sport Psychology. Further developments are considered in 1970 and 1979 respectively with the creation of International Journal of Sport Psychology and the Journal of Sport Psychology. A plethora of new research and information highlighting the benefits of sport psychology inevitably provoked western countries to introduce sport psychology into their sports teams and organisations, including the USA employing their first sport psychologist for the 1988 Olympic Games. Considering the nature of modern day professional sport, elite sport is often decided by small margins and any small advantage becomes hugely important. As the benefits of sport psychology became more apparent throughout the proceeding years, coupled with the growing levels of investment and commercialisation within sport, the professional regulation of sport psychology has provided greater quality control and sport psychology has become a key component of elite sport.

Sport in the 21st century has grown exponentially. The impact of globalization and commercialisation within professional sport is unquestioned and a “global sporting arms race” has emerged. (Hargreaves 2002: Oakley & Green 2001). To elaborate, nations are drastically over-spending to compete for a share in the existing pool of Olympic medals due to a host of reasons including but not limited to: greater presence on the international stage and national pride. With the rapid professionalization of sport and gargantuan levels of investment, there has been a dramatic change in the approach to nurturing and developing elite sports stars. A clear shift is observed from simply considering the physical output of an elite athlete to nurturing the ‘human’ as well as the sportsman or woman.

As sport psychology is still a relatively new phenomenon, research has been focused solely on elite sports stars as elite sports harboured the greatest demand for marginal gain and is financially set up to invest in sport psychologists. Subsequently, there is a clear gap in the literature considering the needs and wants of amateur or part-time athletes. However, particularly in Britain, and post the industrial revolution, there is greater opportunity for leisure than ever before. The emergence and rapid growth of ultra-endurance sports and events such as the Ironman has attracted a wide range of highly motivated amateur athletes, or what is termed by Stebbins as ‘Serious Leisurists’.

2.2 ‘Serious Leisurists’ and the shift for Sport Psychology in Ironman

Stebbins (2007) identifies a Serious Leisurist as an individual who will commit all or nearly all of their leisure time to pursuing their sport or amateur sporting career. They are also willing to make great financial commitments and will behave in a way which befits a professional sportsman. Lee & Ewert (2019) support this stating that Serious Leisurists see their sport as a major part of their identity and subsequently are willing to make huge commitments and sacrifices in order to achieve success. Committed Ironman competitors fall into this bracket seamlessly, with athletes aiming to reach Kona, Hawaii (the Ironman world championship) often having to commit hundreds of thousands of pounds and tens of thousands of hours to achieve the qualification times. These athletes commit unrivalled time and efforts into their physical condition but are less adept at improving their mental condition and subsequently a specialised coach is advantageous.

Notwithstanding being amateur, the level of commitment matches and often outweighs that of professional athletes, and subsequently there exists a large demographic who are willing to implement mental training and invest in mental training coaching and services in a hugely mentally demanding sport. The problem exists with the lack of research undertaken on Ironman athletes due to the sport's 'amateur' status and the historical development of sport psychology in a professional or Olympic setting, resulting in a lack of education for Ironman coaches and athletes. Despite the amateur status, it is possible to argue Ironman is more like a professional sport than an amateur one due to the high quality provisions surrounding the sport, similar to college sport in America which is 'amateur' purely by classification.

Despite some criticism over the lack of research encompassing mentality in Ironman, it is clear some progression has been made in recent years. A number of articles have been posted online and specifically through the Ironman website including "Building your 'Mental Toughness' in Training" and 'How Mentally Tough Are You' which provides some reasonable advice deriving from athlete's own experiences. Moreover, on IronmanU sport psychology has recently become a specialist category whereby coaches can advertise themselves as being strong in sports psychology. However, only 99 out of thousands of registered coaches from around the world ticked the sport psychology specialisation, with even fewer having any kind of formal qualification, degree or education in the field. Considering over 300,000 amateur athletes registered to compete in Ironman events in 2018 (Ironman.com 2018) and remembering the aforementioned findings of Grand'Maison (2004) it is clear the supply does not meet the demand and subsequently a business opportunity is apparent. Specialised research encompassing Ironman and psychology will provide coaches with greater academic underpinning, encourage more coaches to recognise the importance of and specialise in sport psychology to improve their service or simply allow athletes to enhance their own understanding and widen their 'armoury' of skills.

2.3 Current Literature on Ironman Triathlon

Looking at the Ironman specific literature, it is clear the bulk of research has been submitted from scholars with a sports science focus. For example, the top studies on Google Scholar include titles such as 'Fluid balance during and after Ironman', 'Recovery

after an Ironman triathlon: sustained inflammatory responses and muscular stress' and 'Weight changes, medical complications, and performance during an Ironman triathlon'. Moreover, sports science focused papers dominate the first ten pages of Google Scholar and SportsDISCUS with the keywords 'Ironman triathlon' entered. Such research has fueled developments concerning the physical output of athletes, from shaping training schedules to influencing the manufacturing of new kit and equipment to aid performance, however less research considers the mental side of Ironman.

A key study which first looked at the mental side of Ironman is the work of Grand'Maison (2004), which is considered throughout other chapters of the thesis also. To provide more depth, Grand'Maison utilised an online tool to survey several triathletes in Ottawa. The study provided a comprehensive analysis encompassing the motivations of athletes to train coupled with the fears and challenges they face or must overcome. Ultimately, the study provided an overview of 'what mental skills Ironmen need' whilst being the first study to truly unearth the huge demand for mental training services whilst recognising the lack of 'suppliers'.

Building upon the work of Grand'Maison (2004), Bridel's entry in 2010 offering a socio-cultural analysis in Ironman is important. This study continued to look at the mental side of Ironman, however through understanding the 'pain to pleasure' paradox within the sport, Bridel found that there are many ways athlete's construct pain and pleasure. Moreover, athlete's seeked to negotiate positive and negative areas of pain, whereby positive pain was paramount to building discipline, toughness and achieving the goal of 'Ironman identity'. While physical, the study of positive pain started to reach into the mentality of the Ironman and how athlete's train their minds to endure and even welcome pain to reap the benefits.

Some further studies assessing mental strategies and Ironman include Frimmel (2012), Hammermeister and Burton (1995), Mccarville (2007), Marshall et al (2015) and Megs, Chen & Koehn (2019). These scholars begin to break down simply the need for a mental approach in Ironman and each look at more specific areas and strategies which are discussed throughout the proceeding literature review. For example, Frimmel considers the importance of Visualisation and the ability of athlete's to mentally rehearse training sessions and races to create feelings of confidence and calmness, whereas Marshall et al &

Meggs, Chen & Koehn consider the flow state and apply it to Ironman, recognising athletes who can achieve flow and dissociate from pain as holding an advantage. These studies are discussed in further depth in the following sub-sections.

2.4 Mental Toughness

Seminal work in the late 90s established mental toughness as one of the most important psychological characteristics in achieving excellence in performance (Gould, Hodge, Peterson & Petlichkoff 1987; Goldberg 1998). Firstly, it is critical to define what exactly Mental Toughness is, and how mental training and strategies are currently implemented within sport and triathlon. Connaughton et al. (2008) define mental toughness as:

“A natural or developed psychological edge that enables mentally tough performers to cope better in general than their opponents with the demands and related pressures that occur at the highest level in sport” (p.83)

This advantage was illustrated further as producing greater consistency, having superior focus or determination and remaining in control under pressurised situations. It is clear that this definition has been somewhat accepted and contextualised in a variety of surrounding research (Connaughton, Hanton & Jones 2010; Thelwell, Weston & Greenlees 2005; Jaeschke, Sachs & Dieffenbach 2016) and subsequently provides a solid definition that will inform our understanding, interpretation and application of mental toughness throughout the research project. Zeiger & Zeiger (2018) add that mental toughness can be measured against an individual's ability to produce consistently excellent results in both subjective goals (personal goals) and objective goals (race times, standings) despite significant stressors and adversity. Moreover, athletes who can utilise mental strategies can build mental toughness and aid performance. Jones (2002) identified 12 key facets of mental toughness as shown in the table below which provides further depth and clarification into an otherwise ambiguous phenomenon.

Figure 1: Jones (2002) Mental Toughness Attributes and Importance Rankings.

Table 1
Mental Toughness Attributes and Importance Rankings

Attribute	Sum of Rankings	Overall Rank
1. Having an unshakable self-belief in your ability to achieve your competition goals	26	1
2. Having an unshakable self-belief that you possess unique qualities and abilities that make you better than your opponents	50	3
3. Having an insatiable desire and internalized motives to succeed	56	4=
4. Bouncing back from performance set-backs as a result of increased determination to succeed	49	2
5. Thriving on the pressure of competition	76	9=
6. Accepting that competition anxiety is inevitable and knowing that you can cope with it	73	8
7. Not being adversely affected by others' good and bad performances	76	9=
8. Remaining fully-focused in the face of personal life distractions	77	11
9. Switching a sport focus on and off as required	108	12
10. Remaining fully-focused on the task at hand in the face of competition-specific distractions	56	4=
11. Pushing back the boundaries of physical and emotional pain, while still maintaining technique and effort under distress (in training and competition)	67	7
12. Regaining psychological control following unexpected, uncontrollable events (competition-specific)	66	6

2.5 Mental Strategies

Visualisation

Perhaps one of the most commonly accepted psychological methods of mental training is that of Imagery and Visualisation. Frimmel (2012) studied the role of Visualisation and the effect on performance of Ironmen. Visualisation represents the practice of imagining parts of or all of the race and mentally rehearsing what you want to do or to happen. In Frimmel's research, Ironman athlete's often practiced Visualisation in response to overcoming some kind of challenge. For example, one of the participants in this study exclaimed: "At mile 20 of the run I visualize myself pausing, regrouping, mentally resetting and just doing a 6 mile run".

Visualisation is a mental skill which is implemented prior to or before a race and therefore can be considered as primarily a preparatory skill. Separate mental skills may be better

applied whilst racing specifically, however the success of Visualisation is still undoubted within sports literature. In a race such as an Ironman which can last up to 17 hours it is almost impossible for an athlete to avoid adversity (Frimmel 2012) and athletes often have a good gauge of what is likely to go 'wrong'. Subsequently, Visualisation is critical in pre-empting crisis and helping to remain calm when catastrophe hits with a pre-calculated, measured response now a part of the athlete's armoury. Gould et al (1999) support this, having looked at the preparation of Olympic athletes and concluding athletes were three times less likely to achieve their goals when allocating no preparation to the anticipation and visualisation of adversity.

Lavallee et al (2012) suggest there are four stages of visualisation. Firstly, athletes should seek relaxation through closing their eyes, sitting in a quiet place and taking 5-10 deep breaths with an emphasis of 'pulling in and pushing out' their stomachs during breaths. Next, athletes should pinpoint a specific skill or situation they wish to visualise and should aim to imagine it as vividly as possible with an emphasis on body sensations. It is argued visualisation is most effective when an individual action or situation is considered opposed to visualising multiple scenarios at once and losing accuracy. An athlete might then seek to simply visualise themselves performing the skill from the perspective of someone else or on a slow-motion video. Finally, Lavelle et al (2012) contend that visualisation should be combined with a 'pre-race routine' to maximise concentration levels prior to and during a race. However, Bali (2015) warns visualisation should be practiced with caution. It is argued athletes should only visualise controllable's (technique, warm up, timings) and should avoid overthinking about aspects they cannot control (weather, competitors) as this can greatly increase levels of stress and anxiety and subsequently adversely affect performance. For example, Bali found athletes across a variety of sports who practice visualisation and interpreted their anxiety as harmful in fact increased their levels of anxiety and stress opposed to decreasing it.

A further study assessing the effectiveness of Visualisation in sport is presented by Sheikh & Janssen (1994) whom argue that Visualisation is most effective when used to improve more complicated cognitive skills opposed to simple motor skills. However, Ryan & Simons (1983) contest this and suggest there is a level of cognitive thinking in any skill and subsequently skills or movements should be placed on cognitive-motor continuum rather than being placed in exclusive black and white categories to gauge the level of

effectiveness Visualisation might provide. Moreover, Sheikh & Janssen (1994) suggest internal imagery is more effective in improving athlete performance than external imagery. To expand, this means that athletes are better to imagine themselves performing the skill or movement rather than imagining themselves performing it in third person and subsequently this offers support for stage two of Lavellee et al's (2012) model but criticism for stage three.

Despite the clear relevance of Visualisation amongst endurance athletes, Zeiger & Zeiger (2019) found it less effectiveness than other techniques. To expand, endurance athletes were measured using ANOVA and a post-hoc Bonferroni test (statistical measures) to assess the factors affecting levels of mental toughness exhibited by the athlete and visualisation recorded a significance score of only 0.18, closely followed by determination at 0.19. In contrast, confidence and positive cognition (or self-talk) scored much higher at 0.52 and finally self-belief was most significant with a sizeable 0.65 rating. This differentiation between the effectiveness of mental strategies will be tested in the research project focusing on Ironman athletes.

Self-Talk

Latinjak et al (2018) state self-talk interventions are effective in improving endurance performance in swimming, cycling and running. Self-talk can be understood as the athlete's 'inner voice' or 'inner chatter' and represents the messages an athlete is telling themselves whether positive or negative. Furthermore, self-talk strategies can be manipulated with the implementation of pre-rehearsed messages and cues to provoke a certain feeling or performance at a desired time. The work of Hatzigeorgiadis et al (2010) supports this having measured 21 endurance swimmers placed in a self-talk intervention group in which the swimmers were provided with cues and self-talk strategies against a control group who were left without psychological training. The estimated mean for the percentage of improvement in the intervention group was 1.47 in comparison with a minimal 0.01 improvement for those in the control group presenting the effectiveness of self-talk on endurance performance.

The nature of self-talk is both diverse and ambiguous. Hardy (2006) presents six different dimensions of self-talk: valence, overtness, self-determined, motivational interpretation,

functions of self-talk and frequency. The valence dimension is critically important within sport and encompasses both positive and negative self-talk. Moreover, positive self-talk represents a form of praise or positive message to focus the athlete on the present, raise motivation and distance them from past mistakes or weaker races. Alternatively, negative self-talk represents messages that provide negative feedback or criticism. This is particularly important as it suggests that athletes who do not pay attention to self-talk strategies and their thought process may not only miss out on the positive effects that can be potentially gained but instead they may incur the negativities of negative self-talk and put themselves at a disadvantage unintentionally.

An interesting consideration concerning the use of self-talk strategies is the self-determination dimension and the variation between self-elected messages and messages which are implemented or provided by others (peers, coaches etc). Returning to the research of Hatzigeorgiadis et al (2010), swimmers were allowed to construct their own motivational and strategic messages opposed to using generalised messages on offer. The personalisation of the plan was predicted as being key to motivating athletes to partake in the implementation of mental strategies in the first place and as a key factor to the overall success. This is supported by Deci & Ryan (1985) whose Cognitive Evaluation Theory states self-talk yields the greatest motivational gain when it is freely determined and created. The Cognitive Evaluation Theory considers the inherent need for humans to feel autonomous and in control of their decisions and cites this as a reason for personal customisation of mental strategies in sport. This approach has practical applications, as coaches might seek to simply provide their athletes with the framework for self-talk strategies and encourage personal customisation of the plan. However, Palmer (1992) suggests coaches might instead seek to provide the cues as they have greater expertise and it should be considered on a case by case basis taking into consideration the experience of the athlete.

Flow

Meggs, Chen & Koehn (2019) undertook important research studying the relationship between Mental Toughness, Flow and subjective performance amongst triathletes including Ironmen and unearthed some key findings. To clarify, Flow is defined as reaching an optimal performance state described as fluid, autonomous movement and

cognitive clarity. Firstly, a moderate-strong correlation was found between Mental Toughness and Flow; those who displayed greater levels of Flow also scored highly in trait confidence, a central component of Mental Toughness (Meggs, Chen & Koehn 2019; Marshall et al 2015). Furthermore, those athletes who displayed greater levels of Mental Toughness had a greater loss on the Self-Consciousness Subscale as well as Time Transformation and Action-Awareness subscales. Subsequently, the advantage of Mentally Tough Ironmen is argued to be in relation to achieving a better state of flow to boost performance compared to less mentally tough triathletes.

Understanding this further, those Ironmen who are more mentally tough than their counterparts are able to immerse themselves in their endurance activity and experience a loss of consciousness better and such an ability is particularly unique to ultra-endurance events. For example, Schumacher et al (2016) found a similar correlation in channel swimmers. Data was taken from 13 individuals who had successfully completed the channel swim and it was found that long-distance channel swimmers were able to separate their minds from their expectations, pain or performance and instead maintain a peaceful focus to help manage pain and emotion. We can summarise the views concerning Mental Toughness and flow from Meggs, Chen & Koehn (2019) and Schumacher et al (2016) in the following metaphor: Mental toughness could be taken at face value as the ability to display extreme strength in individually tough moments, but rather in an ultra-event of substantial duration one cannot 'fight the lion' for so long and instead mental toughness could be considered as the ability to lie in the lion's den peacefully and become comfortable in the potentially daring surroundings.

Anxiety/Stress

It is commonly accepted in sports academia that stress has an effect on performance. Of course, stress is closely related with an athlete's psychology and anxiety control becomes an important component of the mental 'make-up' of competitors (Shephard & Astrand 2000). Early work from Yerkes & Dodson (1908) introduced the inverted-U hypothesis (also referred to as the Yerkes-Dodson law), suggesting that either too little or too much arousal or stress will adversely affect an athlete's performance whereas achieving a moderate level will instead positively impact performance. Subsequently, anxiety control becomes an important mental skill for athletes. This is particularly applicable to Ironman

who compete across multiple sports over extreme time duration and thus have a great level of stimuli capable of provoking stress and anxiety. Lazarus & Folkman (1984) produced a stress model which states stress and anxiety are caused by perceived control, perceived threat and coping resources, and consequently Ironman athlete's competing in the extreme multi-sport endurance event have more threats and less control compared to other endurance events.

Hammermeister & Burton (1995) support this having studied anxiety in Ironmen and finding a greater level of cognitive and somatic anxiety in comparison to their single sport counterparts which justified its importance to the sport. The work of Hammermeister & Burton (1995) is particularly useful as it provides a highly in-depth look at the relationship between anxiety and Ironmen specifically. Subsequently, they reported a number of findings. Firstly, age differences proved significant in levels of cognitive anxiety, with younger Ironmen displaying much higher levels of cognitive anxiety, however gender differences were insignificant. Secondly, levels of anxiety correlated with the importance placed upon a race by the individual. These findings are relatively consistent with Zeiger & Zeiger (2018) whom indicate multivariable analysis of endurance athletes showed older, higher-ranking and male athletes scored highest in Mental Toughness tests.

When assessing methods to manage anxiety in sport, Arthur et al (2017) provide a fascinating study measuring the relationship between psychological skills and managing endurance and fitness within the British military. A great emphasis is placed upon the effectiveness of relaxation methods. To expand, relaxation methods were found to reduce tension and subsequently improve an athlete's readiness to perform. Relaxation techniques are mostly exhibited through the controlling of one's tempo and depth of breathing. Cairds, Mckensie & Sleivert (1999) support this expressing relaxation methods are particularly effective in reducing anxiety and regulating optimal arousal levels when employed in conjunction with other strategies. In this study, athlete's trained using Jacobsen's Progressive Muscular Relaxation (PMR) and Centering which represent methods in which sportsperson's contract specific muscle groups before releasing tension. A great emphasis is placed on the abdominal region. An improvement in running economy and reduced anxiety was elicited, albeit with some biofeedback also provided to athletes which could skewer results as the improvement may not be down solely to relation technique's and psychological practice.

Self-efficacy and Goal-setting

Following on from the findings of Hammermeister & Burton (1995) and the observation of older athlete's displaying less cognitive anxiety, it is important to consider the role of self-efficacy and Bandura's self-efficacy theory (1977). Self-efficacy is defined as one's ability to complete a task or to succeed in a specific situation and Bandura's theory offers four internal sources which affect self-efficacy: performance accomplishments, vicarious experience, verbal persuasion and physiological states. Performance accomplishments are important within the context of mental toughness in endurance sport because we can observe that more experienced athletes display higher levels of self-efficacy and this has a knock-on effect to increase levels of mental toughness. Nicholls et al (2015) support this and state that athlete's with greater levels of self-efficacy display greater levels of mental toughness and subsequently are more able to excel under stressful and testing circumstances opposed to simply surviving.

Furthermore, delving deeper into Bandura's seminal research, it is identified that performance accomplishments are affected by performance desensitisation, performance exposure and self-instructed performance. Performance desensitisation refers to an athlete's ability to control the importance of an event and block out significant nerves or pre-race anxiety. This relates to the flow state and mental toughness in endurance athlete's being measured through the ability to desensitise and achieve flow. Moreover, self-instructed performance relates to the literature encompassing self-talk and the finding that athlete's had greater success when they planned and customised their own race with unique individual cues. As we can see, self-efficacy can be achieved through the implementation of a number of the pre-discussed psychological strategies within the literature review to ultimately improve mental toughness. A number of the inputs for self-efficacy are closely related to mental strategies e.g. flow, self-talk and imagery. Finally, self-efficacy can be improved with the effective use and implementation of goal-setting.

Goal-setting is a common part of sport and endurance athletes will regularly set goals. Goals can vary significantly, from short to medium to long term, and the differentiation between outcome goals (objective, result driven) and performance goals (subjective, performance driven). The achievement of goals is closely linked to self-efficacy and

subsequently the development of mental toughness. Athletes should apply caution when managing their goals. To expand, Lerner & Locke (1995) suggest harder, more specific goals led to greater performance improvements than less challenging, vague goals. However, an athlete who sets unrealistic and over-challenging goals may suffer if they cannot achieve them and their self-efficacy is adversely affected. Moreover, goals which are self-designed proved more effective than assigned goals as athletes exhibited greater motivation to reach their own goals. This supports the theme of athlete customisation throughout the pursuit of mental toughness and improving endurance performance within the literature review.

A common goal observed throughout the literature on Ironman and mental toughness is that of 'breaking up the race'. To expand, athletes reported that they mentally break up the Ironman into a series of mini races, e.g. the swim, transition 1, bike, transition 2, run. Some even went further and broke up the mini races into 'chunks'. This could be illustrated by breaking up the run into four sets of 10km. Such a strategy is particularly relevant in extreme endurance events and allows the athlete to detach from the extreme length of the task ahead and instead focus their minds on individual, more achievable goals one at a time (Mccarville 2007).

Maintaining Mental Toughness

An interesting body of work is put forward by Marshall et al (2015) whom did not identify a link between mental toughness and Ironman race times. On the contrary, they conclude that mental toughness increased only as a result of completed Ironman races and training and those athletes did not improve in mental toughness until one month after the studied event. Moreover, an increase in mental toughness positively correlated with an increase in both confidence and commitment. This line of work is supported by Connaughton et al (2008) whom also recognised the increase in mental toughness post-event but go into further depth by suggesting once mental toughness is achieved it must be maintained. To expand, the development and maintenance of mental toughness is a long-term endeavour and requires the steady nurturing of a wide variety of underlying contributors. Three main factors are identified: a desire to succeed that is insatiable and internalised, a support network comprising sporting and non-sporting personnel, and finally an effective use of psychological skills in training and racing

2.6 Summary of Literature Review

To summarise, the Literature Review has considered a wide range of topics. An understanding has been built on the history of sport psychology and the need for sport psychology services in Ironman due to the greater emergence of serious leisuists. It is clear mental training services for athletes are not adept and there is a lack of qualified coaches who are qualified to offer these services to athletes. Subsequently, we understand that supply does not meet demand and an opportunity exists to those coaches who can seize the opportunity and improve their service. Next, the remainder of the literature review has firstly presented the current literature available specifically focusing on motivations and mental strategies within the Ironman. This is proceeded by a wider analysis of mental toughness, challenges and strategies across a wider context and endurance sports to provide a highly in-depth understanding of this area.

The combination of the sub-chapters within the literature review are critical. To expand, the literature review has first provided an understanding of the past whilst establishing the demand in the present. Moreover, beyond simply establishing demand it has provided an in-depth analysis of the mental challenges and strategies across Ironman and similar sports which begins the education of coaches and builds a greater understanding. With a focus on the Ironman whilst simultaneously utilising similar sports to investigate a wider context and developing a deeper understanding, this study provides a highly detailed analysis of the mental approach to Ironman which is lacking in the current body of literature. Finally, the literature review provides an underpinning for the next stages of the study and specifically the interviews, whereby interview questions will encompass some of the main topics found in the literature review and comparisons will be made in the findings either accepting or rejecting the literature review.

3.0 Methodology

This chapter will provide a detailed overview of the Methodology which was employed to collect the necessary data for the research project, providing rationale for selection.

Moreover, it will outline how the data was collected and interpreted, as well as discussing ethical considerations which underpinned the research project.

3.1 Research Design

This research project aimed to explore the experiences of Ironman triathlon finishers with a specific focus on the mental challenges they faced throughout training and races as well as the mental strategies they utilised to help achieve their goals and improve performances. It was important to seek out the best and most appropriate methodology to best answer the research question and the subsequent objectives. Research is a systematic process encompassing multiple pre-meditated steps, which begins from the research question itself (Andrew et al 2011). Having set the research question, it was clear the study would aim to extract personal experiences and insights from participants and subsequently hope to obtain great levels of detail and depth. It is clear there is limited research amongst sports scholars on mental toughness in sport and endurance sport despite the clear demand from athletes for mental training services. Subsequently, the research project has an exploratory feel, allowing participants to give freely their own experiences in a semi-structured interview setting in the anticipation of recruiting unique findings and sparking future research.

3.2 Research Approach

Next, it was important to understand whether the research project best suited quantitative or qualitative research. Quantitative data has an emphasis on statistical measures, a mathematical approach and yields numerical data often interpreted through the presentation of graphs and tables (Taylor 2005). Alternatively, qualitative data is often the product of exploratory research. It seeks to extract highly detailed opinions, feelings and motivations and data is presented through words and long paragraphs (Taylor 2005). Qualitative research aims to 'delve deep' into a problem and provide rich insights into a phenomena or situation. This research question was best suited to the collection of

qualitative data as it represents an exploratory study which aimed to extract in-depth feelings and opinions from participants and is unconcerned with mass, simplified numerical data. Once a qualitative approach was elected, it was important to set out how the data itself would be collected.

Firstly, a literature review was conducted to better understand the current body of literature encompassing the research topic. The literature review was created using academic tools such as Google scholar, SPORTDiscus and the university online library to ensure high-quality, peer reviewed sources were implemented. It became clear that practitioners offering mental training to athletes were limited and research which could help educate not only athletes but also coaches would have significant practical implications as coaches would improve their service and athletes would improve their performance and hopefully achieve greater levels of satisfaction competing within the sport. Alternatively, there was a fair amount of literature assessing different mental strategies across various sports albeit without too much specialisation on ironman. The literature review sought to understand these mental strategies and the role they played in creating and maintaining mental toughness and subsequently provide a sporting advantage. Such mental strategies identified and discussed comprise of Visualisation, Self-Talk, achieving Flow, managing Anxiety/Stress, Self-efficacy and Goal-setting. Subsequently, these strategies will underpin the interview questions asked to participants.

Based upon the research question, literature review and aforementioned mental strategies four interviews were conducted with four participants. A case study approach was adopted to try and extract as much information from the participants and understand the 'life story' of each participant. Semi-structured interviews were conducted to allow participants to give their feelings and experiences surrounding mental strategies and Ironman and to allow for a comparison with the current literature on the topic (Appendix 1). Semi-structured interviews are advantageous as it allows the interviewer to prepare questions beforehand and create a loose structure whilst still allowing participants to provide unique insights relevant to the study which may have otherwise been missed (Cohen & Crabtree 2006). This was particularly relevant in this study as each participant had a unique story and subsequently a semi-structured approach allowed the interview to be conducted as more of a detailed discussion than a strict Q & A.

3.3 Research Method

Considering the desired practical implications of this study, the study focused on ‘age-group’ athletes or non-professionals. Subsequently, it was most appropriate to conduct interviews with this group opposed to full-time professional athletes. This allowed the study to generate a better understanding of the mental struggles experienced by these athletes and help educate coaches. This was important as age-group athletes and coaches are ultimately the two groups which will interact and work together and will benefit from such a study. Performance against others was less important and personal improvement and performance was seen as more critical.

Veal & Darcy (2014) provide a detailed overview of research methods in sports studies and look at interviews in-depth. Interviews can be structured or unstructured, structured interviews are highly planned and can keep the focus on a desired topic whereas unstructured interviews have no inhabitants and participants can freely provide their experience. This research project will combine the two and utilise semi-structured interview method, where a loose structure is planned and questions are asked but participants are freely encouraged to talk freely. Silverman (2016) supports the use of semi-structured interviews and adds that such interviews are best conducted face-to-face as the interviewer can better guide the interviewee, in comparison to telephone or skype interviews. Moreover, Silverman discusses the prospects of utilising individual interviews or focus groups. Focus groups involve the interviewing of a group of people at the same time which can be time effective. However, for this study due to the relatively small sample size and the dispersion of participants across different countries individual interviews were more realistic and appropriate.

Subsequently, four face-to-face interviews were conducted by the researcher and this method boasted a number of advantages. In face-to-face interviews it is easier for the interviewer to provide support and guidance to the interviewee as well as being able to capture the emotions of the participant. (Silverman 2016). To expand, the interviewer can clearly explain questions should the interviewee misunderstand or misinterpret the questions. This helps the interviewee feel at ease and it is more likely the interviewee will become motivated to participate in the study. In comparison, quantitative methods comprising the sending of questionnaires can leave the participant feeling unmotivated,

less appreciated and subsequently they are more likely to provide lower quality answers or even lie. A disadvantage of conducting face-to-face interviews is limiting the sample size and the adverse effect on later generalising the results; however for this topic a small sample was appropriate as rich, highly detailed insights and experiences were desired.

3.4 Mixed-Methods Approach

Beyond simply four interviews, this study represents a mixed-methods approach and the study takes advantage of a participant observation approach. To expand, as the researcher it is clear that I am representative of the sample studied and subsequently will offer my own reflection and experience in the study from my time training for and completing the Ironman triathlon. This is fairly unique in research and comes with a range of advantages. To elaborate, having a strong experience of the topic will aid the development of the interview guideline and the ability to discuss feelings, experiences and theories with interviewees with a high level of understanding and competence. It prevents the possibility of interviewees to lie or exaggerate and helps aids the honesty and relevance of the discussion. Finally, offering my own reflection is advantageous as it is possible to consider the admissions of the interviewees and recognise similarities and reoccurring themes with my own experience to help identify significant findings.

An additional point to note is the use of Jones (2002) mental toughness scale. To expand, despite the study focusing on qualitative data collection and analysis, participants are asked in the interview to score themselves from 1-5 on twelve statements derived from Jones (2002) mental toughness scale to help establish how mentally tough participants perceive themselves (Appendix 2). This could be viewed as quantitative data as it is requesting a numerical scoring and comparison however is important for the comparison of perceived mental toughness and the strategies and experiences of participants. This helps aid discussion and offer greater depth in the findings and thus has a strong relevance.

3.5 Sample

Sampling involves the process of selecting and recruiting a specific group of the population to collect data for a research project (Latham 2007). In this study, an opportunistic sample was studied due to the researcher's network within the sport of

triathlon. An opportunistic sample is one in which the researcher takes advantage of a readily available sample to them, consisting of participants who are both suitable participants and available. Furthermore, having recently completed my first Ironman the I will share some reflections on the topic as a good representative of the desired participant for the study in the discussion chapter. Four participants were interviewed to collect the data for the research project. Each participant had finished an Ironman triathlon, one having finished a 70.3 (half) Ironman, while the others had finished full Ironman triathlons (140.6), two multiple times and the other on the once occasion. The disparity between participants is advantageous as it helps to consider different markets. For example, the desires, goals and mental challenges of the first time Ironman are likely to vary from the more experienced multiple Ironman finishers. The table below shows the profiles of participants, however for ethical and confidentiality reasons specific times and names are not provided. As the researcher, I am happy to provide my specificities.

Figure 2: Participant Profiles

Participant	Gender	Race Category	Races Completed	Race Times	Upcoming races this season (2019)
1	Male	18-24	Ironman St.Polten 70.3 Austria 2016	7-8 hours	Ironman UK 140.6
2	Male	18-24	Ironman Nice 140.6 France 2016	13-14 hours	N/A.
3	Male	40-44	Ironman Bolton 140.6 UK 2012 Ironman Bolton 140.6 UK 2014 Ironman Klagenfurt 140.6 Austria 2018	13-14 hours 13-14 hours 12-13 hours	Ironman Kalmar 140.6 Sweden
4	Female	45-49	Ironman Frankfurt 140.6 Germany 2016 Ironman	14-15 hours	Ironman Kalmar 140.6 Sweden

			Klagenfurt 140.6 Austria 2018	14-15 hours	
Researcher	Male	18-24	Ironman St.Polten 70.3 Austria 2016	06:51:31	N/A.
			Ironman Klagenfurt 140.6 Austria 2018	15:09:35	

There exist some disadvantages of opportunistic sampling. To expand, Kothari (2004) argues this method prevents the researcher from carefully selecting the demographics of the sample and the participants and subsequently sample bias can occur. This is considered and the researcher has made efforts to prevent homogeneity within the sample and recruit participants representing different demographics e.g. multiple finisher and first time finisher, experienced athlete and novice athlete, male and female, full distance finisher and half distance finisher. Echoing the previous paragraph, this is advantageous for coaches and practitioners as it allows them to better understand various demographics of athletes and the variations in their needs and desires to improve their service to all athletes. Other popular sampling methods were rejected in this study, such as Snowball, Clustered or Stratified sampling due to either time restrictions or incompatibility with the research project.

3.6 Process

The interviews were conducted with the four participants across the UK and were recorded with hand-written notes by the researcher. Participants were contacted and recruited by the researcher through email and interviews were arranged. Firstly, participants were asked to fill out a question sheet scoring Jones (2002) 12 factors of mental toughness to help establish athletes perceived levels of mental toughness. Participants were then interviewed for roughly thirty minutes where an attempt was made to understand the back story of each athlete to support a case study approach. Participants spoke about their history and motivations within the Ironman, before moving on to talk around the topics of mental challenges and strategies. Such an approach allowed for a more detailed analysis of each participant and provided better context behind their answers.

3.7 Pilot Study

A pilot study is a smaller-scale mock study undertaken prior to the main data collection to identify and fix any bugs or issues. It is likely the researcher only has one opportunity to conduct an interview and therefore it is critical the questions are understandable, the structure is clear and the interviewee is presented with an environment to provide the highest quality answers. Dawson (2009) argues a pilot study is critical to identify any potential abstruseness, as well as making the research project more time and cost effective. Subsequently, a pilot was conducted in two stages. Firstly, the interview questions were simply printed out and provided to a small group of friends and family to read through and pick out any faults or mistakes. Secondly, the interview guide was given to five long-distance runners at a local running club, and therefore relatively representative of the sample, to critique. Feedback was encouraged and participants were made aware this was a pilot study and criticism was welcome. Consequently, one change or critique was implemented into the final interviews with the 'Ironmen'. Some participants in the pilot study were not familiar with some of the terminology such as Visualisation, Flow or Self-Talk. Therefore, when the final interviews were conducted these terms were explained to participants when questions were asked helping to achieve clarity and understanding. Specifically, in question 7 of the interview guideline (Appendix 1), time was taken to ask if participants understood the mental strategies presented and if not the researcher offered an explanation to aid the participant's clarity of the terms.

3.8 Reliability & Validity

Reliability and Validity encompass the objectivity and credibility of research (Silverman 2016). Reliability assesses the consistency of research and for research to be reliable it must be repeatable. On the other hand, Validity refers to the accuracy of the results and to what extent what is claimed to be measured is actually being measured. Reliability and Validity are important in research to attain trustworthy and significant findings.

The essence of reliability in research lies in consistency, and subsequently the ability to replicate both the processes and the results of research (Leung 2015). Leung continues to express a degree of variability is tolerated within qualitative research due to its less inhibited structure compared to quantitative research however studies should maintain

similar dimensions. It is hoped this research is reliable however some limitations are recognised. To expand, the sample provides a good split of demographics with a small sample size and therefore the results may be difficult to generalise beyond the sample. However, a clear methodology and interview guideline is provided and the study can be replicated by other researchers to aid generalisation. Future research is encouraged to test the results of this study and build on the existing, limited body of research amongst sports scholars.

According to Golafshani (2003), validity determines how truthful research results are and to what extent is the research truly measuring what it claims to measure. In qualitative research, validity is not a fixed term. It is much more ambiguous and interpretive as qualitative research seeks to measure personal experiences and feelings which are much more difficult to contextualise, particularly in comparison to quantitative data and statistical analysis and presentation. Subsequently, academics have adopted alternative terms such as quality, rigor and trustworthiness (Golafshani 2003) and the achievement of high quality research results is specific to each research project. As the sample was small and interviews were conducted face-to-face, data collected was of high quality as it was possible to engage in highly detailed conversations with the ability to ask follow up questions and properly understand the participant responses. Moreover, due to the nature of the study participants were being interviewed on their passion and personal interest and therefore appeared highly motivated to participate in the study and provide high quality insights.

3.9 Ethics

Sales & Folkman (2000) state all research should be ethical and research should not be conducted if the researcher or participants are subjected to any harm. Subsequently, a number of ethical considerations were taken throughout the planning and undertaking of the research project to protect all involved. Fleming (2013) identified some key ethical practices: informed consent, confidentiality and the right to withdraw, all of which were considered in the research. Such principles are universal throughout research; however some ethical considerations may vary or be specific to a certain research project or topic.

The biggest concern within the research project was the protection of the participants and their data. Firstly, all participants were provided with a verbal explanation of the study and were made fully aware of what they were consenting to. Participants were made aware that their personal information would not be shared within the master's thesis and to counter this participants are presented with fake names in the study. This protects the participant's privacy and allows them to remain unidentifiable. Furthermore, participants were made aware of their right to withdraw at any time in the study without reason or explanation should they desire. To do so, participants would simply have had to contact the researcher or the research supervisor and request their data is removed and destroyed. Participants were provided with the relevant contact details prior to the interview being conducted.

3.10 Guidance from the NSD (Norsk senter for forskingsdata)

This research project was completed in compliance with the NSD (Norsk senter for forskningsdata) in which an ethical application was submitted and approved and ethical guidelines were provided to underpin the research project. An initial application was submitted to the NSD for the research project however some advices were offered (Appendix 3). Most notably it was requested that participants did not give written consent as personal data was not being processed and instead hand-written notes were taken to record the interviews. A revised application was submitted to the NSD and approval was granted on the 9th April 2019 (Appendix 4). In conjunction with the requests of the NSD consent was recorded orally to participate in the study. Participants were also made aware that all data would be destroyed upon the completion of the master's thesis.

A final ethical consideration is the right of the participant to be recorded accurately. The interviews conducted were recorded via hand written notes made by the researcher to again make efforts to protect the privacy of participants. To ensure accuracy, the notes were read back to the participant at the end of the interview to check the accuracy of the recordings and to ensure the participant was happy the information was both true and accurately represented their feelings and experiences.

3.11 Further Limitations and Considerations

Some limitations exist within the research project. Mostly, the study is limited by the relatively small sample studied. Due to time and practical constraints the sample was confined to four participants and the researcher's personal reflections. A small sample was advantageous as it was not only realistic but it also allowed for high-quality interviews and data collection, however, a smaller sample is less representative of the wider population and issues of generalisation arise. Furthermore, the study focused on age-group athletes, however future research may look to include professional athletes to aid comparison and understanding. The study has aimed to avoid gender bias by including a female participant, or age bias by assessing different age groups, however it is clear the research is still male dominated (which could be expected in a male dominated sport) and misses certain age groups. For example, the research project has considered participants representative of three age group categories despite Ironman offering 15 non-professional age categories. Future research might again seek to explore some of these further age categories and particularly the unique needs of elderly 'Ironmen'.

4.0 Findings

4.1 Mental Toughness Response

Participants were provided with a question sheet at the beginning of the interview (Appendix 2). The question sheet comprised the 12 statements seen below presented in the literature review from Jones (2002) who identified these aspects as key factors of mental toughness. Ranking participants on their level of mental toughness was useful to help contextualise some of the findings in the later discussion. However, it is necessary to treat these results with some caution as participants scored themselves and subsequently may have answered in an untrue manner to present themselves in a better light or simply interpreting the scale differently to other participants.

Figure 3: Jones (2002) Mental Toughness Scale Participant Responses.

1 = Not at all. 5 = Strongly agree

Statement	Steve	Joanna	Joe	Alex
I have an unshakable self-belief in my ability to achieve competition goals	5	2	4	3
I have an unshakable self-belief I possess unique qualities and abilities which make me better than my opponents	1	1	1	2
I have an insatiable desire to succeed and internal motivations	4	4	4	4
I can bounce back from setbacks as a result of increased motivations	4	3	5	4
I thrive on pressure to succeed and of competition	3	3	4	3
I accept anxiety in competition is inevitable and know that I can cope with it	4	4	4	3

I am not affected by other's performances	5	3	2	3
I remain fully focused despite personal life distractions	4	3	3	5
I can switch on and off a 'sporting focus' when required	3	4	4	4
I can remain fully focused on the task at hand despite competition-specific distractions	4	3	3	5
I can regain psychological control following unexpected and uncontrollable events	3	3	4	4
I can block out physical and emotional pain while maintaining technique and effort under distress	3	4	5	4
Accumulated score	43	37	44	44

4.2 Steve's Biography

Steve was introduced to Ironman after suffering from an ankle injury and beginning cycling as a release from the pressure of running. His background is in marathon running and completing his first marathon in 1998 helped build a 'what's next?' mentality which led him to the Ironman. This was coupled with being inspired by who he described as a 'demigod' at his local running club who had completed Ironman races in the past and became a strong source of motivation. He first completed the Ironman in Bolton, UK in 2012 and returned two years later as he felt he had made mistakes with his nutrition in the first race and wanted a second attempt to improve his time.

Having finished three full Ironman races and currently training for a fourth, Steve can boast a wealth of experience within the sport and specifically with regards to the accompanying mental challenges and strategies. Firstly, he discusses how every race is different and presents different challenges. To expand, in the first race at Bolton the swim was particularly tough and in the second the bike was the hardest part with a strong wind

on the day. On each race Steve experienced a lot of mental fatigue at mile 100 on the bike, explaining that at this point you feel as though you are finished on the bike only to remember you still have 40 minutes of cycling to complete. Similarly, he experienced a “huge mental wobble” at the start of the run as it led him uphill, as well as crashing his bike in the first race. He concluded that with time you learn to simply accept that things will go wrong and the race will hold great challenges that you are ready to deal with.

When discussing mental strategies, it was apparent the bike was the hardest leg. He talked about flow and how he struggles to achieve flow on the bike ride like he can on the swim or the run. “I’ve never been able to go beyond what I thought was capable on the bike”. He alludes to not being able to ‘flip the switch’ and get through the ugly spots on the bike which then allow you enter flow or a peaceful state. He attributes this to being a stronger swimmer or runner. Alternatively, Steve discusses how he takes a scientific approach to Ironman. He takes great time to study the courses of his race and breaks down slopes into a percentage time he has allocated to spend on each hill. Moreover, he utilises a power meter to carefully measure his power output. Such diligent preparation helps to reduce stress and anxiety and breeds confidence as the plan is executed throughout the day.

Steve is a full time golf-coach and has a great depth of experience in coaching and coaching principles, albeit in a different sport. He shares an experience of joining a triathlon club and becoming extremely frustrated with being coached by multiple people and receiving an inconsistent message about his swim technique. Subsequently, he argues a 1-1, more personal coaching approach is most effective particularly in a sport as demanding as Ironman. Moreover, he expresses he would be interested in an Ironman coach who could help him shift the mental barrier or push through the threshold on the bike and help him get into flow.

An interesting area of this interview was drawing upon Steve’s existing coaching knowledge, which is unique compared to the other participants. He freely discusses strategies such as visualisation and self-talk and argues the selection and application of such skills in the relevant moment is critical. To develop, he suggests coaches should not just teach athletes these skills but they should also help them to recognise when these skills are needed to make them effective. A coach should help an athlete build his or her ‘armoury’ but also help build autonomy to allow the athlete to recognise the “key

moments” or most threatening ones in a race and draw upon the most effective psychological skill. He finishes by explaining the physical movements in Ironman are relatively simple and instead a coach who can plan a strategy for the race itself and help an athlete execute it is more important.

4.3 Joanna’s Race History

Joanna began racing in Ironman after meeting her husband and being pushed to complete a 10k race before continuing training and eventually making the decision to tackle the Ironman. Having finished Frankfurt in 2016, Austria in 2018 and now training for the Sweden 2019 Ironman, she explains how the whole journey is extremely emotional to her and the Ironman has helped her tackle periods of depression after having two children. She discusses how swimming in the open-water, biking at early hours of the morning on quiet roads or going for a long-run is mentally refreshing and exhilarating. Before the Ironman, she had a background as a sprinter and had become involved in administrative work in triathlon and health & fitness clubs.

Mental strategies are a part of racing in Ironman for Joanna. When discussing flow, she discusses how she finds the Ironman marathon easier than regular marathons she has finished (Paris & Manchester) as it is easier to find flow in the Ironman with the pace being much slower. She adds that she will only stop for feed stations as too much walking can disrupt flow and make the run harder. Joanna talks about how she looks at the age category on other female competitor’s race vests and uses this as confidence and mental stimulus to keep going and avoid walking. However, it often becomes difficult to maintain pace for a long period of time and Joanna admits to facing difficulties maintaining flow in the latter stages of the swim, bike and run.

Alternatively, self-talk is an important strategy for Joanna. She discusses some of the messages she has utilised throughout training and races, including “I love the hills” and “I love the wind” when she faces either of the respective challenging circumstances. A powerful message for Joanna is repeating the name of her two children in her head repetitively in moments that are particularly challenging or difficult.

Joanna talks about being prepared to face difficult challenges in Ironman and highlights how training helps to build some mental fortitude and experience. To expand, on long training days anything can go wrong similar to the race and this allows you help build the skill of staying calm in the face of unexpected adversity. However, she also recognises that in training you can never replicate the sheer length or output of the race itself and subsequently she would benefit mostly from a coach who can help her in the final six miles of the marathon. Joanna explains how she loses focus and becomes highly fatigued in this part of the Ironman and a coach who can help provide mental strategies to regain focus and trigger belief would be highly beneficial.

Joanna talks about how she has never previously received coaching but is highly interested in receiving help and has contemplated reaching out to some triathlon friends who provide a coaching service. However, work and life commitments have made this problematic as she trains very early in the mornings and spends time with her kids on the weekend and therefore it is difficult to include a coach. She discusses how a personal, soft approach would suit her best and a coach that really understood Ironman, its specificities in comparison to other sports and the huge life commitment it entails. She preferred the idea of a coach who provided a mental training service to simply a physical one and wants to build greater mental toughness in training.

4.4 Joe's Ironman Reflection

Joe represents a relatively new Ironman competitor, having only finished the Ironman 70.3 in St Polten, however is competing in his first full Ironman race in Bolton, UK this July. Subsequently, he differs from the other interviewees as he represents a demographic which is experiencing the full Ironman journey for the first time and subsequently his experiences, needs and wants are different to more experienced athletes. Joe was introduced to Ironman when a friend at university took on and finished the full distance motivating him to try it for himself. He commented on how he never saw enough challenge in simply a marathon and the Ironman provided a real challenge which allowed him to test himself and push his body to the limit. It was clear the impact of his peers was highly influential on the initial decision to take up triathlon and Ironman.

Discussing the mental side of Ironman, Joe expressed his belief that the mental side of the Ironman was just as important as the physical side and one could not finish the race without either. He considered the two sides as '50-50' and stated "Without mental toughness you have no hope". When considering strategies, it was clear Joe was highly invested in mental tricks and tactics. Firstly, he expressed he finds the run training extremely boring and tries to counteract this by 'keeping his mind active'. To expand, he listens to podcasts and audiobooks to stimulate his mind and even engages in conversation with himself about the topic he is listening to. This could be seen as a form of self-talk coupled with distraction and dissociation from the task at hand, and similarly self-talk was a reoccurring theme on the bike training. To expand, Joe expressed his strong reliance on self-talk in challenging moments of long cycles including climbing steep hills or riding into a strong head-wind, telling himself "If you stop now you won't finish". He admitted without such self-talk he would not finish the long bikes and this was a very important mental strategy to him.

Moving forwards, Joe didn't consider Visualisation as an important or effective skill in the Ironman. For example, he expressed that Ironman does not require any complex skills and is simply the continued repetition of very easy movements. Subsequently, he would not visualise or mentally rehearse any skill within the Ironman the same way he would rehearse a complex stroke in cricket, however, he does allude to often 'having a vision' of getting into cold water and trying to remain calm and not panic.

Instead, Joe discussed strategies such as goal-setting and recalling past experience. Goal-setting proved a critical strategy, with goals being set for the overall task of each training session and also goals being set for small chunks of the session. To illustrate, if Joe was to train for 10 hours, he would set a 10 hour goal but also a goal per hour. Similarly, for a 50 mile bike ride he would have a goal per ten miles. He commented that this was advantageous as he was able to approach each new goal with a refreshed mind-set and greater confidence, however goals could not be too easy or too hard or they would become less effective. He was also able to draw upon past experiences of completing a series of small tasks to achieve a greater goal and subsequently take confidence from this.

A brief discussion was held around flow state and achieving flow. Joe suggests that breathing techniques are particularly important to him to achieve flow. This was most

important in the swim leg where developing a consistent rhythm and allowing a steady breathing pattern was critical to aiding relaxation. As Ironman only requires a low level of arousal he simply focuses on trying to relax, starting slow and maintaining pace. This helps reduce heart rate and allows Joe to train in zone '1 or 2'.

When discussing the possibility of coaching, Joe provided some fascinating insight. He discussed his education and having studied for a degree in Sports and Exercise Science and feels well equipped to take on the Ironman on his own. Moreover, Joe discussed his personality and how he was a highly rebellious person who responded badly to authority or 'being told what to do'. As such, Joe expressed he would not be interesting in coaching the first time around however if he failed the Ironman then he might seek help. He considers himself as a mentally strong person and sees this as strength and therefore is less interested in mental coaching.

However, he does discuss how if he were to ever seek mental coaching he would prefer a democratic coach who provided him with strategies or tools but allowed him to implement and personalise them himself. Nevertheless, one area of support he is open to is someone to share experience of race day. To expand, he discusses how the only time he feels anxiety or stress is the hours building up to a race and subsequently he would be interested and would benefit from the guidance of someone who had plenty of race experience and can help calm those nerves through sharing experience and race-day strategy.

4.5 Alex's Experience

Alex finished Ironman France (Nice) in 2016 and had only previously raced the Leeds 10k race. His first interaction with the Ironman was during an internship and receiving a presentation from a co-worker that had completed the Ironman. Initially, he did not know what the Ironman was but could sense it was something big. He thought no matter what it was if his co-worker could do it so could he and become angry and jealous that his companion was 'bragging'. This is interesting as such peer influence stoked his competitive drive. Subsequently, Alex started his journey towards the Ironman and began learning the skills through YouTube videos and online material.

A key theme when discussing the mental hardships of the Ironman with Alex was the inevitability of hard times and things going wrong within the Ironman. Reflecting upon his journey, he discusses how at the start he didn't realise this and dealing with problems which arose helped make him a stronger person today. He built mental toughness along the journey. Alex expresses how if he were to race again he would be aware of the challenges and would be better equipped to complete the race and achieve a better time. Considering the physical side, he expresses how physical fitness is always limited and ultimately the Ironman is a mental battle.

"I could have finished the race with less physical fitness than I had and I always knew that as long as I didn't stop I would finish. It simply became a mental battle not to stop, it wasn't a physical challenge".

As such, Alex practiced some mental strategies. He spent a large amount of time studying his race and the race course and set goals along the course prior to the race. A major goal was to reach the top of a large hill around mile 70 on the bike and then he knew it was downhill and he could ease off and reserve energy. Goal-setting was most applicable to the bike and the run as the swim was "carnage" and too disorientating to maintain any kind of mental control. He does however admit he was positioned at the front and centre of the swim 'pack' and this is considered the most aggressive area to swim within an Ironman and in hindsight would position himself elsewhere.

A really interesting admission from Alex was the effect of others on his motivation and behavioural habits. Having been motivated from his co-worker to begin the Ironman, he discussed a story how in training he once went on a training ride and didn't finish it due to extreme cold and rainfall and was questioned by his family and friends if he could do it. The next week he rode from Leeds to Newcastle and was "hell-bent" on proving people wrong. He likens himself to Ross Edgley, an extreme ocean swimmer, and talks about how the Ironman made him become primitive, comparing himself to a Neanderthal. To expand, he explains how his life became incredibly structured; he would sleep, eat, train and repeat. His mind-set became only about being consistent in training and subsequently he drowned out his inner voice and didn't view self-talk as a tool which he used or was affected by. This also allowed him to limit stress and anxiety, by focusing on simply what he had to do that day and becoming almost robotic. Alex mentions how his Dad expressed that he had

become very quiet and introvert during the Ironman which was not his normal personality type.

Alex provided a thought-provoking opinion regarding Visualisation. He talked about how it was hard to implement visualisation as he was simply doing the same skill thousands of times and rehearsing skills was not necessary. However, he explains how visualisation became an incredibly powerful motivational tool as he would often visualise the feeling of finishing the race and crossing the finish line. This was powerful to motivate him through periods of hardship. He relates this to finding flow on the bike. To elaborate, Alex said he was only able to find flow when he was performing a part of the race he was strong, including climbing up hills on the bike. In these moments, he was able to visualise the finish line and the picture he had rehearsed many times before to draw on motivation.

Finally, Alex discussed coaching within Ironman and shared that he received a coaching plan from one of the best triathlon coaches in the world who has coached multiple athletes to Olympic medals including two gold medals. This was very helpful as he was relatively unsure of how to train for the Ironman and received some tips on mental approaches to the race. However, he discussed how he only met with the coach on one occasion to gain a training plan and rejected regular training. This was because he did not want someone to scare him and constantly tell him of the challenges coming up; in this case 'Ignorance was bliss'. Similarly, Alex discussed how the Ironman was a personal vendetta with himself and he wanted accountability to whether he succeeded or failed, continuing to admit that if he failed first time round he might have sought a greater level of coaching. He discusses how hypothetically if he were to seek coaching he would want a soft approach from a coach who took the time to understand his personal battle and could offer mental strategies which were personal to him.

4.6 Participant Observation Approach: Researcher's Reflection

Reflecting upon my own personal experience and considering some of the key themes throughout the interviews it is clear the Ironman is unlike any other sport. The dedication required to complete an Ironman triathlon is extreme and the sport subsequently becomes a lifestyle instead of a hobby. In 2016, I completed the 70.3 St Polten race in Austria, before falling short of the finish line in Vichy 140.6 in 2016 and finally bouncing back to finish

the 140.6 race in Klagenfurt, Austria, two years later. My motivation to finish the Ironman came from a perceived failure or weakness in my early life and the need to ‘balance the scales’ and fulfil the potential I knew I had. The Ironman became a personal vendetta, providing the ultimate test between myself and my mind and became highly emotional.

Prior to Ironman, I had no experience of long distance swimming, biking or running and adopted an attitude to learn as you go along. However, it became clear the web was bursting with training plans and a great plethora of information was available teaching the principles of each of the three disciplines from a scientific and physical outlook. For example, this allowed me to teach myself to swim through the studying of online YouTube videos. Conversely, the mental side of Ironman was never discussed and in hindsight I was naïve to the importance of training my mind. Throughout my journey, this began to happen naturally and it is clear that many of the aforementioned techniques in the literature review and interviews I stumbled upon myself.

Firstly, goal-setting and ‘breaking up the race’ was absolutely critical to my success. This manifested through the implementation of a strategy I would call ‘flags and cones’. To illustrate this strategy, for a 20 mile run, at each 5 mile quarter I would collect an imaginary flag (a big goal) and similarly at each 1 mile section I would collect an imaginary cone (a small goal). This allowed me to condition my mind to completely separate from the task at hand; at no moment would I allow my mind to distract from the next ‘cone’ available and each flag reached become a huge psychological boost. Furthermore, between each flag I would decide on a separate motivation. To expand, running to the first flag I might have focused on my family, whereas for the next one I would change to visualising the finish line of the race. This strategy became habitual throughout training for many years and was absolutely critical to helping me finish the race. Reflecting upon this strategy, it is clear there are elements of goal-setting, visualisation, flow and self-talk and it is fascinating to me now how my mind reached this strategy with no prior education or understanding in the face of extremely testing times.

Considering the importance of coaching, it is important for me to reflect on my first full Ironman attempt in Vichy, 2016. Unfortunately I did not finish the marathon section of the race mostly due to poor nutrition and pacing. In hindsight, I was very inexperienced in triathlon and perhaps due to my competitive nature attempted the full Ironman too early. I

had not yet developed the ability to implement my mental strategies as discussed above and simply raced with my physical fitness – it was not enough. However, this experience was invaluable to finishing the Ironman in Austria 2018; training only goes so far in Ironman and it is impossible to recreate the feelings and emotions of a full race. Moving forwards, I was able to truly appreciate the sheer difficulty and length of the race and adjusted my methods accordingly. ‘Cones and flags’ helped me tremendously to stay calm, on pace and break down such a large event. In the second Ironman, at no moment did I choose to think about the finish line unlike the first Ironman and race towards it, but instead stayed very calm throughout the day only focusing on reaching the next checkpoint in a controlled manner.

Fortunately, I was able to learn about the mental side of Ironman through self-discovery and trial and error, however, a coach who could have provided me the mental tools and race-day experience I previously lacked would have been invaluable in the first full Ironman. In my case, this might have saved years of huge financial costs, the sacrifice of vast time and effort and even bouts of depression from suffering through the Ironman process with the memory of a failed attempt. In the end, I would not change my journey for the world having come out on top and having made great self-discoveries, but contextualising this in a business setting and understanding the extreme emotion involved with racing in Ironman triathlons, it is clear to me that the lack of mental training services coupled with the massive benefits available to athletes like my former self provide a great business opportunity for coaches who can understand the sensitivity of the race and provide a soft, personal approach.

5.0 Discussion

This chapter will discuss the theory from the literature review in comparison to the findings from the interviews and researcher reflection. The results of the research project will be tested against the current theoretical body to evaluate if the results accept or reject the current findings of those authors. The discussion chapter is structured through the consideration of the three SRQs presented in the introduction. This allows for the opportunity to provide high detailed and comprehensive answers to the questions in consideration. A further point for discussion is offered considering Jones (2002) mental toughness scale and its role in the study.

5.1 Understanding age-group athletes who compete in Ironman

Conducting the interviews it was fascinating to understand what motivated the four participants to commit such huge efforts to the Ironman. A wide variety of reasons surfaced. Firstly, the influence of peers was evident in both positive and negative connotations. To expand, Steve discussed the influence of whom he described a ‘demigod’ and Alex described a co-worker whom he was ‘jealous’ as a the key motivator for beginning the Ironman. My own experience echoes this, having wanted to belong the ‘exclusive club’ of Ironman.

Alternatively, the huge challenge of the Ironman appeared to correlate with the mindset and needs of many of the participants. Particularly Steve, Alex and Joe who each discuss their determination in the context of pushing the limits. Steve repeats his ‘what’s next?’ mentality throughout the interview and always wanting to reach that next level or next step. Similarly, Alex discusses the Ironman as a personal vendetta whereas Joe didn’t see a marathon as a reasonable challenge and instead saw appeal in the Ironman as a test which would push him to the limit. My experience would again support this line of thinking seeing the Ironman as the ultimate test and subsequently gratification of mind and body. Alternatively, Joanna’s motivation differed slightly seeing the Ironman as a way to achieve peace of mind however all athletes committed a considerable amount of time and resources to the race. This includes sacrificing student loans, holidays and other luxuries.

Despite some differentiation in motivation, it is clear each athlete is representative of a Serious Leisurist, proposed by Stebbins (2007). The Ironman is described as a lifestyle opposed to a hobby or a leisure sport and subsequently each of the four participants have

made huge commitments to the sport in terms of financial, time and energy. Despite life distractions, set backs and personal difficulties athletes persevere to compete in the Ironman. Coaches will receive highly dedicated athletes and must match the level of their service to the commitment of the athlete.

5.2 What challenges do these athletes face and what mental strategies do they use?

It is clear athletes face numerous challenges throughout preparing for and racing within the Ironman. A clear similarity throughout the interviews was the inevitability of all athletes to face unavoidable and unpredictable challenges within the race and the importance of mentally preparing themselves to deal with whatever may arise. Joanna discusses how training can help build that mindset to an extent, however it is impossible to truly replicate the latter stages of the race. Nonetheless, coaches might seek to create circumstances in which the athletes encounter unexpected challenges similar to what may occur on race day to help build mental resilience and toughness. For example, a coach might seek to create an environment to replicate the last six miles of the marathon. This could include asking athletes to train without food to simulate hunger and train the mind to cope with such situations.

Similarly, athletes discussed undertaking great preparation prior to the race in the form of studying the course map and having all their equipment and strategy mapped out days in advance to limit as much stress as possible. The combination of building a 'prepared for anything' mentality coupled with preparing as vigorously as possible to reducing stressors is supportive of Lazarus & Folkman's work (1984). Despite the Ironman having a huge amount of potential threats athletes try to limit this as much as possible whilst simultaneously preparing for those uncontrollable factors. The younger athletes in the study both discussed their lack of experience and were most interested in a coach who could prepare them for the specificities of race-day. Herein lies a key opportunity for coaches, to help share their unique experiences of race day challenges and procedures to help athletes relieve stress and anxiety.

Considering Visualisation in Ironman, Alex and Joe provided the greatest insight into using this strategy. Both talked about the simple movements involved in the three disciplines within Ironman and rejected it as a strategy to improve technique. This supports Sheikh & Janssen (1994) whilst rejecting Ryan & Simons (1983). Moreover, Alex discusses a benefit of visualisation as a motivational tool. Considering my own reflection

also, visualisation can be powerful and highly emotional helping to increase motivation. Visualisation can also be powerful to distract the mind and help achieve flow. Subsequently, coaches might consider Visualisation as a tool to help increase motivation in their athletes whilst aiding other mental strategies.

Self-talk was a popular strategy amongst interviewees with Joanna reciting the names of her kids in difficult moments and Joe claiming he could not finish his long bike rides without self-talk. Joanna personalising her messages with her kids name supports Deci & Ryan's (1985) Cognitive Evaluation Theory and self-talk can be seen a positive strategy. Alex discusses becoming primitive throughout the Ironman process and blocking out his inner voice completely. This is interesting as it illustrates the removal of negative self-talk and could be seen a positive interpretation of self-talk strategies despite not actually using messages himself.

Flow proved a very important strategy for the participants within the study. Meggs, Chen & Koehn (2019) identified confidence as a central component to achieving flow and the research results strongly support this. To expand, Joanna expressed the biggest difficulty in achieving and maintaining flow particularly in the later stages of each discipline whilst also scoring lower than the other participants in confidence based statements of Jones (2002) mental toughness evaluation. Similarly, Steve recognises the importance of flow and consistently mentioned his lack of ability to find flow on the bike compared to run. He attributes to this to his running background and his perceived lesser ability on the bike, and we can interpret this by suggesting his lower confidence on the bike prevents or at least contributes to the lack of ability to achieve flow in this discipline. Alex supported this by expressing he was only able to find flow when climbing hills on the bike as this was his strongest skill. Nonetheless, athletes recognise flow as important in a race of such great length and coaches might seek to implement flow strategies whilst simultaneously aiming to boost the confidence of their athletes particularly in weaker areas.

It is clear the seminal work of Bandura (1977) and his theory of self-efficacy has strong links to goal-setting within this study. Joe discussed his use of goal-setting and how the achievement of small goals throughout a training session allowed him to achieve the next small goal, the one after and the rest. The setting of small goals to achieve a larger one allowed him to build up his self-efficacy and improved his ability to complete training sessions. Similarly, my reflection is supportive of Mccarville (2007) who discusses the

concept of ‘breaking up the race’. My cones and flags strategy was absolutely critical throughout the two year journey to finishing the Ironman in both training and on the race itself. With the sheer length of the Ironman, breaking the race into chunks allows for the building of self-efficacy as well the distraction from the larger goal at hand. Coaches should seek to implement goal-setting with their athletes. Furthermore, coaches should seek to identify a structure of goal-setting for each training session in which the athlete can recognise and strive for ‘checkpoints’.

5.3 Is there a demand for mental training services offered by coaches?

Assessing the demand for mental training services offered by coaches, it is clear some demand exists. Specifically, assessing the work of Grand’Maison (2004) and Schumacher et al (2016) a clear demand is expressed. Coupled with our understanding of the historical context of the emergence of sport’s psychology through the elite sport sector as well as the limited number of Ironman coaches offering mental training services it is clear service is not meeting demand. The results of this research study offer support but only to an extent. To expand, all of the interviewees expressed either an interest in receiving coaching with mental training services or recognised the benefits of a coach, however athletes expressed some concerns.

Alex & Joe provided a fascinating insight and talked about the concept of personal accountability and personal vendettas. They discussed how the Ironman is a hugely personal endeavour and both wanted to attempt the challenge on their own accord the first time round. Moreover, the possibility of coaching was only accepted if either were to fail the Ironman on the first attempt and then they might seek help, however until that happened each athlete was adamant that they wanted to achieve the Ironman themselves and to have personal accountability.

Discussing the type of coaching athletes would be most interested in, all four of the interviewees expressed their preference for a ‘soft approach’ to coaching. This stemmed from different sources for each of the athletes, however can largely be attributed to the highly-committed nature of training for Ironman. A common theme throughout the interviews was the expression of simple movements involved within the Ironman and how coaches should alternatively focus on specific race-day preparation and strategies as the basic movements do not need much coaching. Furthermore, Joanna discusses the difficulties of combining the long hours of training with other commitments in her life

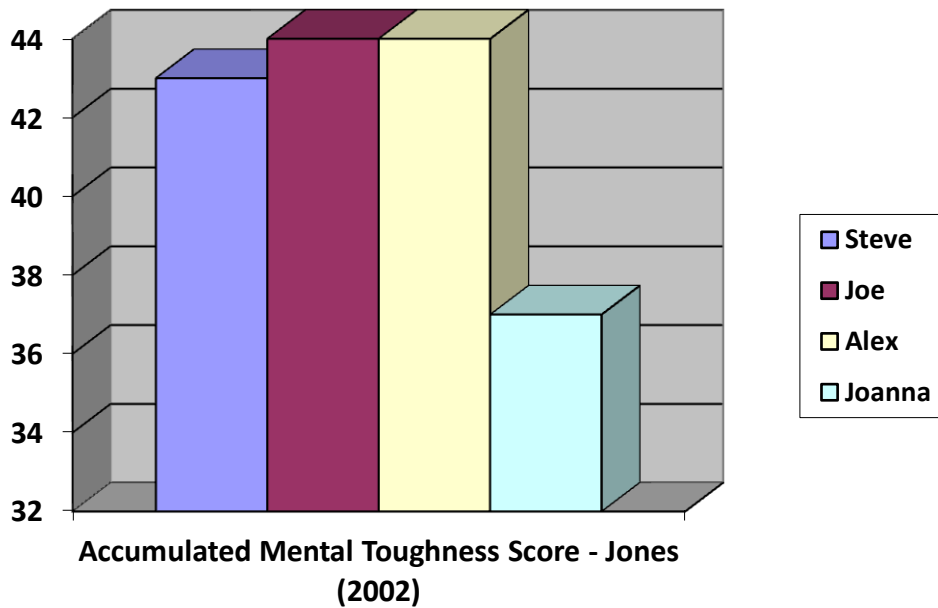
whereas Joe discusses having a highly rebellious personality and responding badly to authority. Similarly, Steve eludes to his vast experience within the sport and his coaching experience and finally Alex wanted a coach who understood his personal battle.

Remembering the work of Hatzigeorgiadis et al (2014) and Deci & Ryan (1985) surrounding the personalisation of self-talk strategies and reflecting on the responses of the participants, it is clear that a democratic, soft approach is most suited to coaching within the Ironman. The finding's reflect the opinion of Steve, who expressed that coaches should look to help 'arm' their athletes with psychological skills whilst promoting autonomy. Ironman coaches should seek to understand their athletes on a case-by-case basis to truly understand their personalities, life distractions and motivations for competing. This research project has not only highlighted the demand for mental training services but has also uncovered the type of demand from Ironman athletes, including how and when they wish to receive Ironman coaching with mental training services.

5.4 Jones (2002) Mental Toughness Scale

A further point for discussion deriving from the research completed is the assessment of mental toughness and it's link to the use of mental strategies. Assessing the results of Jones (2002) Mental Toughness Scale, the scores are fairly similar however Joanna is lower than the other athletes. Zeiger & Zeiger (2018) discussed how mental toughness can be measured against an individual's ability to achieve excellent results despite significant stressors. It was clear in the interview that Joanna was more frustrated than the other three participants with her personal results within the sport. She expressed her frustration at reading triathlon magazines and seeing the exceptional results of professionals and becoming irritated she could not commit the same level of time to the sport. Similarly, Joanna was the most distracted by other areas of her life expressing the difficulty in managing her family and work life with training. Despite using some strategies, it is clear Joanna successfully uses fewer mental strategies than her counterparts.

Figure 4: Jones (2002) Accumulated Mental Toughness Participant Scores.



Understanding the benefits of mental toughness presented in the literature review, it is clear mentally tough athletes boast an advantage. However, it is difficult to establish whether mental toughness leads to better performances or better performances leads to greater levels of mental toughness. Nonetheless, setting achievable training and race goals is a powerful tool for coaches however it is critical to consider the personal ability or circumstance of the athlete to carefully manage the implementation and maintenance of mental toughness. Mental strategies and mental toughness are intertwined, whereby mental strategies are critical to providing athletes with the necessary mental tools to aid the development and maintenance of mental toughness and mentally tough athletes reported a greater use of mental strategies.

6.0 Conclusion

This chapter will conclude the research project and reflect upon the importance of the study focusing on the method, findings and its future applications. The conclusion will summarise the original research question and SRQs, consider the method used and its strengths and weaknesses as well as the contribution of the study to the existing body of theoretical research and its practical applications.

6.1 Research Question and SRQs

Firstly, it is important to return to the main research question, is there a need for mental training services in Ironman? Overwhelmingly, this research project answers yes, recognising a large disparity between supply and demand concerning this particularly service. Statistics derived from the literature review coupled with the responses from the participants interviewed in this study present a substantial answer.

Considering the SRQs, it is clear this demand comes with specific considerations to Ironman athletes. Moreover, understanding age-group athletes it is clear a defining characteristic of Ironmen is the high level of commitment and dedication they exude, whereby the Ironman becomes highly emotional and personal to competitors. Coaches can seek to fill the void for mental training services and there is a demand for mental training services offered by coaches, but they must understand their athletes. Coaches who can understand the specificities of their clients including their personal life commitments and internal motivations will be more successful in connecting with their athletes and offering a better service. Beyond the personal approach, the study sought to answer the unique challenges Ironmen face and the mental strategies they employ. The study has focused on five main mental strategies: visualisation, flow, self-talk, reducing anxiety/stress and self-efficacy/goal setting. Their relationship with mental toughness and the role mental toughness plays in the success of athletes is also considered. It is clear visualisation is less suited to Ironman except as a motivational tool due to the lack of complex movements, whereas the next four strategies are highly relevant and influential within Ironman. Some further strategies were presented from participants including 'breaking up the race' and cutting the race into mental chunks.

Ultimately, we can conclude the three SRQs by bringing them together. To expand, after recognising the demand for mental training services offered by coaches, it is clear the coach who can understand the specificities of the race and their athletes will be most effective. This relates to understanding the personal outlook of the competitor whilst simultaneously recognising the best mental strategies for their competitor and the unique struggles they face.

6.2 Contributions to Research and Future Implications

The research project aims to fill a large void in the existing body of literature focusing on the mental approach to Ironman. This is an area of research which has yet to receive sufficient attention despite the high level of demand from amateur athletes for this service. With academics taking a predominantly sport's science orientated focus, there is a great need for research encompassing the mental struggles and strategies within Ironman to aid the introduction of sport's psychology into sports such as the Ironman which encompass serious leisuists. The practical applications of such research is key, educating coaches and athletes alike to aid the improvement of mental training services offered by coaches and the performance or lifestyle of the athletes. It is important to consider this research project studied a relatively small sample comprising of participants representative of limited demographics. Subsequently, there are lots of opportunities for scholars or academics to build upon this study. Future research might analyse a different demographic of Ironman e.g. elderly Ironmen, or alternatively take a quantitative approach in the attempt to get a much greater sample size and test the results of this study.

6.3 Reflection on Methods and Mixed-Method Approach

This study was completed smoothly and the mixed-methods approach was advantageous. To expand, the literature review allowed for a comprehensive analysis of the topic and the literature surrounding it, subsequently informing the interviews and interview questions. The interviews were fascinating and participants were highly motivated to share a lot of information as they were talking about their passion. By adopting a mixed-method approach and choosing a topic in which the researcher had a vast level of experience it was highly advantageous as it was much easier to engage in deep conversation with the participants about issues specific to the race. Moreover, it was much harder for participants

to lie or give false answers. The mixed-methods approach also permitted the collection of all the interview data and allowed the researcher to analyse and reflect upon the data afterwards in its entirety providing a more whole analysis. Such an approach to research is fairly unique yet provided substantial benefits and helped supervise the collection of fascinating insights and rich data..

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8.0 Appendices

8.1 Appendix 1: Interview Guide.

Interview Guide.

Brief.

“This study seeks to understand your experiences training and competing in Ironman races. Specifically, it hopes to understand the mental challenges you faced and the strategies you might use. Your data will be completely confidential within the study however should you wish to withdraw from the study at any time you may do so without any explanation or reason by simply contacting me and requesting so. May I ask for your oral consent to participate in the following interview and study? Great, Thanks!

Questions/ Topics of discussion.

1. Ironman history. When did you start, why did you start and what motivates you?
2. Race history. What races have you completed? Do you race beyond Ironman, marathons etc?
3. To what extent do you think the mental side of Ironman is important? How does it compare or influence the physical side?
4. Do you currently practice any mental strategies or tactics? If so, which strategies?
5. Is there any area of the Ironman which is most mentally challenging and requires strategy and focus? E.g. training, swim, bike, run?
6. Do you receive coaching? If not, would you be interested in coaching and would a coach qualifier in sport psychology and mental strategy be more appealing?
7. I’m going to discuss a few strategies (Visualisation, Self-Talk, Flow, Anxiety, Self-efficacy and goal setting). Do you use any of these strategies? If so, which are most important? In what context do you use them?
8. Any closing comments or any experiences you would like to share?

Space for notes...

8.2 Appendix 2: Participant Interview Sheet.

Participant Self-Audit Sheet.

Name:

Age:

Races Finished:

Please read carefully the following 12 statements and score each one from 1-5. 1 = Not at all, 5 = Strongly Agree.

1. I have an unshakable self-belief in my ability to achieve competition goals _____
2. I have an unshakable self-belief I possess unique qualities and abilities which make me better than my opponents _____
3. I have an insatiable desire to succeed and internal motivations _____
4. I can bounce back from set-backs as a result of increased motivations _____
5. I thrive on pressure to succeed and of competition _____
6. I accept anxiety in competition is inevitable and know that I can cope with it _____
7. I am not affected by other's performances _____
8. I remain fully focused despite personal life distractions _____
9. I can switch on and off a 'sporting focus' when required _____
10. I can remain fully focused on the task at hand despite competition-specific distractions _____
11. I can regain psychological control following unexpected and uncontrollable events _____
12. I can block out physical and emotional pain while maintaining technique and effort under distress _____

8.3 Appendix 3: First Email Response from NSD with Recommendations.

N

NSD Personvern

27.03.2019 13:48

Det innsendte meldeskjemaet med referansekode 167348 må kompletteres for at NSD kan fortsette vurderingen.

Når du har gjort oppdateringene i skjemaet, må du gå til siden "send inn" og trykke "bekreft innsending".

Dersom du har ytterligere kommentarer eller spørsmål kan du skrive en melding i dialogfeltet over og trykke "send melding".

Følgende kommentar er gitt av NSDs personvernrådgiver:

As you will conduct the interviews without recording and by just making hand written notes, it is our assessment that this project will in fact not be processing personal data, as long as you DO NOT ask for written consent. As gathering written consent will mean that you will be handling personal data. We ask that you instead inform the participants orally about your project and ask for an oral consent. We can then give you an assessment for anonymous processing. You can open this option for us by removing all the selections you have made on the two first pages in the form ("Name (also with signature/written consent)"). After you have done this and sent the form back, we will be able to give you an assessment for anonymous processing relatively quickly.

8.4 Appendix 4: Second Email Response from NSD Granting Permission for Study.

N

NSD Personvern

09.04.2019 07:25

Det innsendte meldeskjemaet med referansekode 167348 er nå vurdert av NSD.

Følgende vurdering er gitt:

It is our assessment that this project will not process data that can directly or indirectly identify individual persons, so long as it is conducted in accordance with what is documented in the Notification Form and attachments, dated 09.04.2019, as well as in correspondence with NSD. As a result, the project does not need an assessment from NSD.

WHAT DO YOU NEED TO DO IF YOU ARE GOING TO PROCESS PERSONAL DATA?

If the project is changed in such a way that you will process personal data, you will need to notify this to NSD by updating the Notification Form. Wait for a reply before you start processing personal data.

WE END OUR FOLLOW-UP OF THE PROJECT

As the project will not process personal data, we end all further follow-up of the project.

Good luck with your project!

Contact person at NSD:

Data Protection Services for Research: [+47 55 58 21 17](tel:+4755582117) (press 1)