

Sports Mental Toughness and Self-esteem in Professional and Amateur Athletes..

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B.A. Honours Psychology

Submission of Thesis and Dissertation

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ACKNOWLEDGEMENTS:

Firstly, I would like to thank my supervisor Michael Cleary Gaffney for all of his help, support and guidance throughout the duration that I have done my research study. He has been immensely helpful and has been such a reliable source throughout this study for every query no matter how big or small. I would also like to thank all of my lecturers who have taught me over the course of my degree as this would have not been possible without their knowledge and guidance.

I would like to thank all volunteer participants for taking part in this study and for helping to make this research possible and also the owner of Straight Blast Gym, John Kavanagh for allowing me to carry this study out in his gym. I would also like to thank my father as you have guided me towards this area of research and without you, I wouldn't have the passion in the field of sports psychology that I do.

ABSTRACT:

The aims of this study were to find whether professional and amateur Mixed Martial Arts athletes differed in their levels of self-esteem and sports mental toughness. If the levels differed between males and females and if their years of experience could predict higher levels of sport mental toughness and self-esteem levels. This study consisted of 63 (Males=55, Females=6) participants aged 18-36 years old (M=25) and used the Sports Mental Toughness scale and the Rosenberg self-esteem scale. Findings have shown there is a statistically significant difference between Professional and Amateurs in Self-esteem and sport mental toughness. There was no difference in males and females' levels in sport mental toughness or self-esteem. Years' experience also does not predict higher levels of sport mental toughness or self-esteem levels. Implications of this study included an even ratio of males to females as 90% of participants were male. Also, an electronic version of the study could have helped to gather more participants by more people gaining access to the study.

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Studies have shown that rates in sport participation is rising, and becoming more popular among people. A study conducted in Ireland showed that 78 percent of adults participated in some form of physical activity. However, rates among different age groups can differ with sport participation being least popular in 65+ year olds (Fahey, Layte & Gannon, 2014). Having high levels of mental toughness gives an individual the ability to cope in a high-pressure situation with stress and anxiety (Jones et al, 2002). Mixed Martial Arts Athletes compete in front of thousands if famous enough even millions of viewers. They are categorised based on their fighting and competing level, amateur being a lower classification than professional. Mixed martial arts consist of blended training in multiple sports. MMA has 27 rules that must be obeyed, these include no fish hooking, no hair pulling and no elbowing or kicking while your opponent is on the ground (Unified Rules of Mixed Martial Arts, UFC, 2020). Professional competitors would demonstrate a more extensive skill set in mixed martial arts. Research in this field is limited although it is a fundamental aspect of an athlete's emotions. Self-esteem and mental toughness have been chosen because of their importance in the role of an athletes' emotions, these can then affect how the individual preforms physically in the sport. Elite athletes and amateur athletes will be compared along with the comparison of male and females.

Self-esteem:

Self-esteem can be used to describe a feeling of being happy in one's character and their abilities (Wilson and Wilson, 1995). Self-esteem has become a frequently used word across households and among schools. Self-esteem is the degree of value a person may place on themselves, it is developed and can be influenced throughout the course of our lives. A person should demonstrate high or low levels of this. Self-esteem can also be defined as the feeling of

self-respect and self-worth (Rosenberg, 1979). Maslow also highlights the importance of self-esteem in his hierarchy of needs in which you must fulfil lower needs (food, shelter, love) in order to reach your full potential of self-actualization. The need before the peak is the esteem need or self-esteem which can be fulfilled by achievement, status, self-respect or respect from others (Maslow, 1987). Self-esteem can cause a person to be more outspoken in social situations and although it does not directly demonstrate leadership in itself it may be an indirect effect from higher self-esteem. People that show levels that are elevated in self-esteem tend to be more likable overall as a person, and more favourable in a group setting (Baumeister et al, 2003). Self-esteem can be scored on a scale including: high, medium and low. Various studies have found that exercise can increase tiers of self-esteem and those who didn't actively participate in sports had lower levels of self-esteem (Frost & Mckelvie, 2004; Haugen, Safvenbom & Ommundsen, 2011). Akcakoyun, found that those who constantly engage in sports activities have a higher level of self-esteem compared to those who don't engage in sport. These results suggest that sports could have an influence on self-esteem levels (Akcakoyun, 2018). Another study, focused on only females containing regular exercise. Findings from this study showed that the group taking part in the programme documented higher levels of self-esteem compare to those in the control group after part taking in regular exercise (Yigiter, 2014). Mehmet (2014), compared 215 futsal players (indoor football), to the general public in to compare difference in levels of self-esteem. Findings showed that futsal players had higher levels of self-esteem compared to those who are non-players. Futsal players scored medium to high self-esteem whereas, the control group scored low-medium (Mehmet, 2014).

All of these studies explored have statistically significant results to prove that sport does have a beneficial effect on our self-esteem levels. But for those who don't experience high levels of

self-esteem other findings suggest that those with lower levels of self-esteem may be weak to reflected appraisals because they tend to assign negative views of themselves to others (Hewitt, 1984). Findings have shown that, athletes also hold higher self-esteem compared to non-athletes. Further studies are then needed in order to examine if self-esteem levels differ in athletes at various levels e.g. professional, semi-professional and amateur. A study examined professional athletes, amateur athletes and non-athletes in Arak city. 150 people participated in the study, ages ranged from 20-40 years, using the Rosenberg self-esteem scale. The key findings showed that both professional and amateur athletes scored higher self-esteem levels than those non-athletes. Professional athletes also scored higher than amateur athletes (Samadzadeh, Abbasi & Shahbazzadegan, 2011). Although findings are sufficient, Self-esteem has limited studies in the area of sports psychology and further studies are needed in this field especially in combat sport. Self-esteem in athletes is very important as it has an importance effect on competence and improves focus on performance levels (Bandura, 1982). If they feel they are doing a good job or are feeling better in themselves they are more inclined to succeed. Athletes having high self-esteem is very important as they are being judged constantly by the public eye depending on their performance. Studies tend to not focus specifically on combat sport athletes.

To examine self-esteem specifically in mixed martial arts, a study was conducted on adult women taking part in mixed martial arts class in karate, learning to defend themselves. This took part over the course of six months and included 30 women. Results from this study showed that all of the participants showed advancements in self-esteem levels after the end of the study (Guthrie, 1997). Findings of another study on both males and females self-esteem levels, results showed males held favourably higher levels of self-esteem compared to their female counterparts (King, Hyde, Showers & Bushwell, 1999). Also, a study containing 60

participants were assessed in terms to find their levels of self-esteem. They were assessed before and after a karate competition. Findings showed that self-esteem was lower for beginners than for those with higher belts. Also, by winning trophy's higher participants levels of self-esteem (Richman & Rehberg, 1986).

Mental toughness:

Mental toughness allows people to manage adversity through resilience in the mind. Being mentally tough can help athletes to reflect on setbacks in order to improve. This can be influenced on environment e.g. coaches (Crust & Clough, 2011). Those who are mentally tough believe that they have the power to control their own destiny and they also hold a high feeling of self-belief (Clough, Earle and Sewell, 2002). People who are mentally tough tend to be more optimistic throughout daily life and this helps them to overcome stressors day to day. Mental toughness is also very crucial as an athlete as they ideally would be physically tough and also mentally tough. Being mentally tough as an athlete can help them to overcome losses more easily and also it can help them get through the physically injuring parts of training (Goldberg, 1998). It can also help to overcome challenges and given them a more open mind when it comes to learning from mistakes and learning new tasks e.g. a combination, in sports (Ruth, 2018). In terms of mental toughness in athletes it is described as a characteristic of a successful athlete. It is also known as a fundamental trait in excellence and performance in a setting of sport (Gucciardii et al, 2015). There are twelve ranks of attributes of a person. The top three being mentally tough, these include; having an unshakeable belief that you are better than your opponent, bouncing back from a defeat with an increased motivation to succeed and having an unquenchable ambition and motivation to succeed over your opponent and that you have better qualities (Jones, 2002). Other attributes include the ability to push past failure instead of

perceiving it as a setback (Carr, 2010). Limitations of this study include sport types. This study helps us to understand what exactly sport mental toughness is and how to see if it is present in another person or athlete.

Scientists have classed that referees are performers, therefore also relevant in terms of sports mental toughness. Findings of 159 participants, showed many years of experience has an effect on their mental toughness levels. Supporting findings by Jones et al, they found experienced sports officials have higher mental toughness level than those with less experience (Jones et al, 2008). In their study, concluded mental toughness experts should educate referees in their careers from the start rather than beginning when they achieve elite status (Micoogullari, Gumusadag, Odek & Beyaz, 2017). In 2018 a study was conducted that consisted of 323 tennis players, in order to measure their motivation and mental toughness in the sport. The results showed the competitive tennis players categorised into subgroups according to a within person approach type of achievement goals and subgroups according to mental toughness levels and motivation. Results suggested that athletes tend to follow numerous achievement goals together rather than those in isolation. For example, a sports club may set a goal to obtain a certain trophy or award by the end of the year. Limitations of this study include that the reports were done by themselves therefore could contain a self-bias (Cowden, Mascaret & Duckett, 2018).

A more recent study conducted in 2018, on sports mental toughness in mixed martial artists at different competing levels. This study consisted of 136 participants, they were categorised into three groups: professional, semi professional and amateur. They were assessed through a questionnaire using a psychological performance inventory-A and also used the sports mental toughness scale. Results of this study showed that from the three groups there was a statistically

significant difference. Professionals showed higher scores than the semi-professional and the semi-professionals had significant scores compared to the amateurs. They differed in all aspects, positive thought, confidence and determination (Chen & Cheesman, 2013). Findings of another study showed that the highly skilled athletes demonstrated significantly higher levels of mental toughness compared to less skilled athletes (Thomas, Schlinker & Over, 1996). Finding shown while testing mental toughness in Korean female athletes showed that elite athletes are more mentally tough than those who are non-elite (Shin & Lee, 1994). Throughout the studies explored, some believe that mental toughness could be specific to different sport e.g. higher mental toughness in team sport compared to an individual sport, with the exception of combat sport (Bull, Shambrook, James & Brooks, 2005). Results show how research in this field has developed and is still developing especially in athletes that are competing as combat athletes. Majority of studies focus on elite athletes as they are at a higher level rather than comparing both elite and amateur.

Experience:

Findings have shown that self-esteem and sports mental toughness can be affected by factors like amount of experience or time in the sport. Enhancing performance levels at younger ages mean preventing injuries to ensure most training time in the sport and after an extensive amount of time expertise increases (Meyers, 2006). Correlations have been found with amount of time spent training in a specific sport and mental toughness levels (Raudsepp & Vink, 2018). Findings have shown that rising age and also amount of years of experience has shown to be a predictor of high levels in total Mental Toughness in athletes (Nicholls, Polman, Levy & Blackhouse, 2008). Findings confirmed this again that age can factor levels of mental toughness, athletes that are older have higher scores of mental toughness (Connaughton et al,

2008 & Lin et al, 2018). Other findings have also found relationships between self-esteem and years of experience. It has been reported that self-esteem levels in adults may increase due to their age and also due to the years' experience the individual has obtained (Robins et al, 2002).

RATIONALE AND HYPOTHESIS:

This study will investigate self-esteem and sports mental toughness, the reason for this research is to find whether males and females differ in levels of self-esteem and mental toughness, and whether fighting classification can predict if these levels will be higher or lower as amateurs. The study also hopes to fill gaps in literature to show the importance of emotional factors that are fundamental in predicting a successful fighter, this will be done by comparing professional with fighters to see if results comply with previous studies. Although there are numerous studies that cover the topic mental toughness and its biological process is still relatively unexplored (Hardy, Bell & Beattie, 2014). This study will also explore whether gender and years of experience can have an effect on sports mental toughness and also self-esteem. Results of one study showed white females have statistically significant lower levels of self-esteem than black and white males (Johnson et al, 2004). There is a lack of literature comparing males and female's self-esteem levels and sport mental toughness in combat sport and this study hopes to add to the body of sports psychology. This gives us a better insight into sport performers mental health. As combat sport is not regularly studied solely.

Hypothesis 1: Amateur vs professional athletes will have a significant difference in self-esteem.

Hypothesis 2: There will be a significant difference in sports mental toughness in amateur vs professional athletes.

Hypothesis 3: Self-esteem levels in males and females will differ.

Hypothesis 4: Levels of mental toughness will differ in male's vs females.

Hypothesis 5: Athlete's with more experience will have greater levels of sports mental toughness and self-esteem.

METHOD:

Participants:

The current study consisted of a total of 61 participants. 55 participants were males and 6 females. The age of the participants that took part ranged from 18 years old to 36 years old. With the mean age being 25 years old. The demographics showed that 57 participants answered that they didn't take part in any other sport outside the gym, while the remaining 4 did. From the 61 participants 28 were amateur and 33 participants were professional with years' experience ranging from 0 to 20 years. The highest number of 53 participants trained in grappling and lowest number of 7 training in Judo.

Measures:

This study will be carried out using Microsoft word to type out the questionnaires being given to participants. At the beginning of this questionnaire participants had to fill out demographics, these included the amount of time they are fighting at their competing level. Which of the multiple sports they take part in and if they take part in any other sports outside of the gym. The questionnaires that will be used are the Rosenberg self-esteem scale (Rosenberg, 1965) in order to compare self-esteem levels of all participants. This is a self-report scale with 10 items. The scale uses a 4-point Likert scale with answers ranging from strongly agree to strongly disagree. The score is summed by adding all 10 scores together, the greater the score predicts the greater the levels of self-esteem. In order to measure sports mental toughness, the Sports Mental toughness scales will be used (Sheard, Golby & Wersch, 2009). This is a 14 item self-report scale. This scale will use a 4-point Likert scale ranging from 'Not true' to 'Very True'. There are 3 subscales used in the SMTQ these are confidence with 6 items, control with 4 items and constancy with 4 items.

The apparatus used in this study included a pen, paper the questionnaire was printed on and also each participant was given an envelope in order to seal their completed questionnaire. Microsoft word was also used for creating the questionnaires and IBM Statistical Software in order to test the results from the questionnaires.

Design:

This study is a quantitative cross sectional between groups design. There are two independent variables being the level of expertise: amateur and professional and gender: male and female. Professional fighters are considered to be of a higher fighting class than amateur fighters. There are two dependant variables in this research, sports mental toughness and self-esteem levels. This study aims to compare levels of self-esteem and sports mental toughness in amateur and professional athletes.

Procedures:

To firstly carry out this study ethical approval was granted from the National College of Ireland ethics board. Upon submitting a research proposal with all details of this study. When ethical approval was granted having followed Psychological Society of Ireland and National College of Ireland ethical guidelines. After this approval from the gym owner was granted to carry the study out in a Gym, the gym owner received a sample consent form, debriefing sheet and also questionnaire to ensure they fully understood what this study would entail. Once this had been done then data collection commenced. Participants in this study have self-identified while signing in at reception and asked if they would be interested in taking part in a study. Participants are given their consent form to read and tick the box that they give consent. When this is done, they then received the paper questionnaire along with a pen and an envelope, they

can seal when they are finished. This was to keep the questionnaires anonymous. Participants had the choice to fill the questionnaire out at reception or if they are comfortable, they can return it at a later time in the drop box provided at the gym reception in the sealed envelope. All demographics are required to be answered by participants, to control for any logistical implications extra questionnaires will be filled out in the case that a participant has lost or not returned theirs. Questionnaires took an average of 7 minutes to fill out and all data was collected over the course of 8 weeks.

RESULTS:

Descriptive statistics has been conducted to display demographics among participants. Table 1; displaying descriptive statistics the youngest participant was 18 and the eldest was 36 (M=25.41, SD= 4.60). participants years of experience ranged from 0-20 (M=4.28, SD=3.94). Table 2; displays frequency demographics including 54.1% (N=33) of participants were professional and 45.9% (N=28) were amateur. 90.2% (N=55) of participants were males leaving 9.8% (N=6) females. 93.4% (N=57) did not take part in any other sports outside of the gym while 6.6% (N=4) did. Table 3 explores the different types of sports available in the gym in which the participants train in. 80.3% train in Brazilian jujitsu, 73.8% in wrestling, 73.8% in Muay Thai, 86.9% in Grappling, 83.6% in Boxing and only 11.5% in Judo.

Table 1: Descriptive demographics

	N	minimum	maximum	mean	Std. Deviation
Age	61	18	36	25.41	4.60
Years' experience	61	0	20	4.28	3.94

Table 2: Frequency Demographics

	Frequency	Valid percent
Professional	33	54.1
Amateur	28	45.9
Males	55	90.2
Females	6	9.8
Other sport (Y)	4	6.6
Other sport (N)	57	93.4

Table 3: Sport Participation

	N	Percent	Percent of cases
Brazilian jujitsu	49	19.6%	80.3%
Wrestling	45	18%	73.8%
Muay Thai	45	18%	73.8%
Grappling	53	21.6%	86.9%
Boxing	51	20.4%	83.6%
Judo	7	2.8%	11.5%
Total	250	100%	409.8%

Self-esteem and mental toughness:

In order to test the first hypothesis; that there will be a difference in self-esteem levels in professional and amateur athletes an independent sample t-test was conducted to compare mean scores. There was a significant difference in scores, with professionals ($M = 33.42$, $SD = 4.737$) scoring significantly higher than amateurs ($M = 31.21$, $SD = 3.725$), $t(59) = 1.99$, $p = .05$, two-tailed. The magnitude of the differences in the means (mean difference = 2.21, 95% CI: -.003 to 4.43) was medium (Cohen's $d = .52$).

Table 4: Professional Amateur

	Professional			Amateur			t	df	p	95% CL	Cohens D
	M	SD	N	M	SD	N					
Self-esteem	33.42	4.737	33	31.21	3.725	28	1.9	59	.05	-.003, 4.423	.52

A second independent samples t-test was carried out to test level of mental toughness in professional and amateur athletes in order to test hypothesis 2. There is a significant difference in scores, with professional athletes ($M = 46.85$, $SD = 5.81$) scoring different to amateurs ($M = 43.07$, $SD = 4.38$), $t(59) = 2.82$, $p < .05$, two-tailed. The magnitude of the differences in the means (mean difference = 3.78, 95% CI: 1.11 to 6.45) was medium (Cohen's $d = .7$).

Table 5: Professional Amateur

	Professional			Amateur			t	df	p	95% CL	Cohens D
	M	SD	N	M	SD	N					
Mental Toughness	46.85	5.81	33	43.07	4.38	28	2.8	59	.006	1.11, 6.45	.7

In order to test hypothesis 3 another independent samples t-test was carried out to find if self-esteem levels in males and females differed. There no significant difference in scores, between males ($M = 32.84$, $SD = 4.16$) and females ($M = 28.5$, $SD = 5.09$), $t(5.75) = 2.06$, $p = >.05$, two-tailed. The magnitude of the differences in the means (mean difference = 4.34, 95% CI: -0.98 to 9.66) was large (Cohen's $d = .93$).

Table 6: Males Females

	Males			Females			t	df	p	95% CL	Cohens D
	M	SD	N	M	SD	N					
Self Esteem	32.84	4.16	55	28.5	5.09	6	2.02	59	.093	-0.98, 9.66	.93

An independent samples t-test was performed to compare levels of mental toughness between males and females. There no significant difference in scores. Males ($M = 45.45$, $SD = 5.64$) scoring similar to females ($M = 42$, $SD = 2.37$), $t(59) = 1.48$, $p = .15$, two-tailed. The magnitude of the differences in the means (mean difference = 3.45, 95% CI: -1.23 to 8.13) was large (Cohen's $d = .86$).

Table 7: Males Females

	Males			Females			t	df	p	95% CL	Cohens D
	M	SD	N	M	SD	N					
Mental Toughness	45.45	5.64	55	42	2.37	6	1.47	59	.15	-1.23, 8.13	.86

Multiple regression was performed to determine if experience in Mixed martial Arts would predict higher levels of self-esteem and Mental toughness in athletes, regardless of their fighting classification. Preliminary analyses of the assumptions of normality, linearity, and homoscedasticity were conducted to make sure there was no violation. The correlations between the predictor variables and the criterion variable included in the study were examined. Neither of the two variables was significantly related to the criterion variable, and these non-significant effects ranged from $r = .29$ (self-esteem) to $r = .34$ (mental toughness). Tests for multicollinearity also indicated that all Tolerance and VIF values were in an acceptable range. These results indicate that there was no breach of the assumption of multicollinearity and that the entered data was suitable for analysis through multiple linear regression analysis.

Since no *a priori* hypotheses had been made to determine the order of predictor variables, a straightforward method was used for the analysis. The two predictor variables explained 13.6% of variance in experience levels ($F(2, 58) = 4.55, p < .015$). None of the variables were found to uniquely predict experience to a statistically significant level: mental toughness ($\beta = .15, p < .21$) and self-esteem ($\beta = -.17, p = .07$). (see Table 8 for details).

Table 8: multiple regression model

	R^2	β	B	SE	CI 95% (B)
Model	.14				
Mental Toughness		.17	.15	.12	-.09 / .40
Self-esteem		.26	.18	.09	-.01 / .38

Note: $R^2 = R$ -squared; $\beta =$ standardized beta value; $B =$ unstandardized beta value; $SE =$ Standard errors of B ; CI 95% (B) = 95% confidence interval for B ; $N = 61$; Statistical significance: * $p < .05$; ** $p < .01$; *** $p < .001$

DISCUSSION:

This study was conducted to explore levels of sport mental toughness and self-esteem in professional and amateur athletes and differences in these levels in males and females also. Hypothesis 1: Amateur vs professional athletes will have a significant difference in self-esteem. Hypothesis 2: There will be a significant difference in sports mental toughness in amateur vs professional athletes. Hypothesis 3: Self-esteem levels in males and females will differ. Hypothesis 4: Levels of mental toughness will differ in male vs female athletes. The first 1-4 hypothesis were tested by obtaining the total scores or either SMT or SE and running 4 individual t-tests. In order to test; Hypothesis 5: Athletes with more experience will have greater levels of sports mental toughness and self-esteem. A standard multiple regression test was conducted.

Amateur and professional:

The purpose of this study was to test the hypothesis to find if there was a difference in professional and amateur MMA athlete's self-esteem levels. The results have supported the hypothesis, showing a statistically significant result; therefore, the hypothesis has been accepted this can be seen in table 4. The analysis confirms there is a statistical significance in the difference of self-esteem levels. However, this was a borderline significance. This borderline significance could be due to the fact, studies have shown that higher levels of self-esteem can be due to athleticism and exercise participation alone regardless of whether a person is a professional or amateur athlete (Frost & Mckelvie, 2004; Haugen, Safvenbom & Ommundsen, 2011 & Whitehead & Corbin, 1997). This is because it can be beneficial to the overall well-being of a person (Slutzky & Simpkins, 2009). As multiple studies show that athletes have higher levels of self-esteem than non-athletes and also have lower levels of

depression (Armstrong & Oomen-Early, 2009). Findings for this hypothesis comply with the prediction that professionals would hold higher self-esteem levels compared to amateur athletes (Samadzadeh, Abbasi & Shahbazzadegan, 2011). Reasons for this include that they spend more time training in a particular sport and also many have more experience than those who compete at an amateur level. While professionals hold higher levels of self-esteem studies also show that within their first six months of transitioning out of elite sport that athlete's self-esteem levels will begin to decrease (Stephan, Bilard, Ninot & Delingeres, 2003).

The second hypothesis stated that there would be a difference in sport mental toughness levels in professional and amateur athletes. After using an independent sample t-test to compare sport mental toughness scores in both groups, this study has correlated a significant difference in levels and the hypothesis has therefore been accepted (Table 5). Previous literature reviewed has shown these results comply with what this study has found. Previous studies have shown that those who fight in a higher competing class hold higher levels of mental toughness. This could be due to the fact they are better at bouncing back from failure and able to cope well under stressful situations. This difference has been found in each competing class as professionals hold higher sport mental toughness than semi-professionals and semi-professionals hold higher levels than amateurs (Chen & Chessman, 2013). Similarly, other findings also suggested that with more skilful athletes comes a higher level of mental toughness (Thomas, Schlinker & Over, 1996). Different factors in an athlete's life can also affect their levels of sport mental toughness for example meditation or their coach (Bell, Hardy, & Beattie, 201). Mental toughness has also been found to be positively correlated with psychological skills like self-talk and meditation, if participants in this study actively participated in this it could mean higher levels of mental toughness (Crust and Azadi, 2010).

Males and Females:

To test the third hypothesis based on levels of self-esteem in males and females results have shown that there was no difference between self-esteem levels in both genders. The hypothesis will be rejected because t-tests showed that there was no difference (Table 6). The results have contradicted the claims by Johnson (2004), that females would have significantly lower levels of self-esteem than males would as there was no significant difference. This result has disagreed with most findings in the literature that predict that females would have a lower self-esteem compared to their male counterparts (King, Hyde, Showers & Bushwell, 1999). However, the groups of males and females did not contain an equal number of participants and could possibly not be an accurate representation of the general population of females in combat sports. If this study was to be carried out again the sampling method could be changed to ensure more equally groups of males and females. Numbers of females that participate in combat sport can be low and appear to not be the norm therefore making it harder to recruit these participants may deem combat sport unsuitable for women (Matteo, 1986). In combat sport women are made feel inferior and could be a reason why studies would mostly show a difference in self-esteem levels when being compared to males (Matthews & Channon, 2016).

The fourth hypothesis tested differences in males and females but in terms of sports mental toughness. The statistical analysis showed there was no difference in these levels in males and females. Again, meaning the hypothesis will be rejected because of this. The results of this test have contradicted the claims that males score higher in levels of mental toughness than females (Nicholls, Polman, Levy & Blackhouse, 2008). Other studies have shown that levels of sport mental toughness could be specific to the sport that is being participated in, this could be a reason why these results differ from previous research (Bull, Shambrook, James & Brooks,

2005). Mental toughness has been previously discussed to be similar to a personality trait meaning it can be different from one individual to another (Horsburgh, Schermer, Veselka & Vernon, 2009). Also, as the participants were all recruited from a gym that values equality and blends both genders in all classes, studies have found that those who participate in sport together are more motivated to achieve goals together, in this case as one team from the same gym (Cowden, Mascaret & Duckett, 2018). Psychological skill such as mental imagery and changes in mindset can enhance levels of mental toughness and can be useful techniques when trying to become more mentally tough (Weinberg & Williams, 2006).

Years of experience:

The final hypothesis tested whether years' experience in amateur or professional Mixed Martial Arts was a predictor for levels of sport mental toughness and self-esteem levels. The statistical analysis showed no significant results and therefore this hypothesis will be rejected. Previous studies have shown that there is a correlation between more time spent training in a sport and higher levels of sport mental toughness (Raudsepp, Vink, 2018 & Nicholls, Polman, Levy, Blackhouse, 2008 & Meyers, 2006). Other studies showed similar results when testing levels of self-esteem with years' experience and age (Robins et al, 2002). As the study conducted showed that years spent training do not predict levels of sport mental toughness and self-esteem levels it has added new results to the body of sports psychology literature. As a participant may be only 3 years in their position as professional this doesn't give us an indication of how many hours they might train in a week or a day. If this study was to be done again this could be considered to be more specific rather than testing the amount of years a participant has spent training. Along with this age could also be used as some findings have

found older participants are more likely to have higher levels of sport mental toughness (Connaughton et al, 2008 & Lin et al, 2018).

Limitations:

This study had multiple limitations. Limitations of this study included the equality of males and female participants. As males accounted for over 90% of the overall study. This meant there was more of an accurate result taken from males as results can differ hugely from person to person. As there were little females the study does not accurately represent all females due to the groups not being equal. Another limitation included that this study was based only on professional and amateur athletes and didn't contain a group who participated in no sports. Therefore, this study cannot be compared to average levels of self-esteem and sports mental toughness. Also, as this questionnaire for some participants was done before or after a training session they could be distracted in their environment. An online option could have been provided along with a paper submission option.

Implications and Further Research:

As a result of this study being conducted it has broadened the field of sports psychology as many studies tend to focus on more common sports or multiple sports when it comes to levels of self-esteem and sports mental toughness. This study has focused solely on rising Mixed Martial Arts and shows us the importance and high levels of self-esteem and mental toughness that both fighting classes have demonstrated. As two psychological factors have already been explored, further study could distinguish other factors that can be difficult on the athlete. For example, performance anxiety etc. Further research in this field could focus more specifically on females as they are a minority group among Mixed Martial Arts athletes. This

would be very beneficial to give people an insight into the mental pressures that come alongside the sport. Research on this topic could also be widened by including a control group to compare self-esteem and sport mental toughness levels to the general public who may not take part in regular sports activity. This control group could also include those who take part in more leisurely activities such as walking. This could then show differences if any, in no sport participation, amateur and professional athletes.

CONCLUSION:

In conclusion, this study has found that there was a statistically significant difference between professional and amateur competing class athletes in terms of overall sport mental toughness and also self-esteem. These results had complied with previous research in this field and has confirmed previous findings in terms of combat sports. For the remaining hypothesis results showed that there was no difference in males and females in self-esteem levels and also sport mental toughness. These results have disagreed with most previous studies therefore, adding new information to the body of sports psychology. These findings could have been affected by sample sizes of each gender as more males take part in combat sport than females. When testing if years' experience in combat sport to find if it predicted higher levels of sport mental toughness and self-esteem results showed this was not a predictor. Again, this finding disagrees with most literature that has been found. These findings are also adding to the body of sport psychology literature. Limitations of this study included sample sizes in terms of males and females. As the study contained predominantly males. As the sampling was voluntary and participants self-selected to participate this was not known until data was being entered. Strengths of this study have included sample sizes in terms of amateur and professional participants as the two groups were similar in size. Also, when collecting data all fields had been completed meaning no missing data that gave more accurate results in the study. As a suggestion, further research on this topic could include how many hours a day that a participant actively engages in training instead of how many years as it didn't give an accurate representation of how much they participated in the sport compared to other participants. Other further research could include focussing on whether a person engages in other psychological skills that could improve their levels of mental toughness like mental imagery etc.

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APPENDICES:

Demographics:

Is your fighting class: Amateur:

Professional:

If amateur how long: _____

If professional how long:

What training do you actively participate in? (tick all that apply)

Brazilian jiu-jitsu:

Wrestling:

Muay Thai:

Grappling:

Boxing:

Judo:

Do you participate in any other sport outside of this gym? Yes:

No:

	Not True	Sometimes	True	Very True
I interpret potential threats as positive opportunities:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have an unshakeable confidence in my ability:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have qualities that set me apart from other competitors:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have what it takes to perform well while under pressure:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Under pressure, I am able to make decisions with confidence and commitment:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can regain my composure if I have momentarily lost it:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am committed to completing the tasks I have to do:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I take responsibility for setting myself challenging targets:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I give up in difficult situations:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I get distracted easily and lose my concentration:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I worry about performing poorly:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am overcome by self-doubt:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I get anxious by events I did not expect or cannot control:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I get angry and frustrated when things do not go my way:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Strongly Agree	Agree	Disagree	Strongly Disagree
On the whole, I am satisfied with myself.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At times I think I am no good at all.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel that I have a number of good qualities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am able to do things as well as most other people.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel I do not have much to be proud of.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I certainly feel useless at times.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel that I'm a person of worth, at least on an equal plane with others.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wish I could have more respect for myself.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All in all, I am inclined to feel that I am a failure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I take a positive attitude toward myself.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Consent to take part in questionnaire:

- I voluntarily agree to participate in this research study.
- I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.
- I understand that I cannot withdraw permission to use data from my questionnaire once I have finished as the data is confidential.
- I have had the purpose and nature of the study explained to me in writing and I have had the opportunity to ask questions about the study.
- I understand that participation involves a short anonymous questionnaire.
- I understand that I will not benefit directly from participating in this research.
- I understand that all information I provide for this study will be treated confidentially.
- I understand that in any report on the results of this research my identity will remain anonymous.
- I understand that I am free to contact any of the people involved in the research to seek further clarification and information.

If you have been affected by anything in this study please do not hesitate to contact the following support services:

Self-esteem support: www.mymind.org/self-esteem

mental health support:

www.grow.ie

call: 1890 474 474

Please tick the box to give full consent to take part in this study

Signature of researcher

I believe the participant is giving informed consent to participate in this study

Signature of researcher

Date

Mental toughness and self-esteem in professional and amateur male in combat sport:

I would like to invite you to take part in a research study. Before you decide you need to understand why the research is being done and what it would involve for you. Please take time to read the following information carefully. Ask questions if anything you read is not clear or if you would like more information. Take time to decide whether or not to take part.

WHO I AM AND WHAT THIS STUDY IS ABOUT

I am a final year student studying Psychology in National College of Ireland. Throughout this study I will compare the levels of mental toughness and self-esteem in amateur and professional fighters. The aims of this research are to find which group shows higher levels of self-esteem and mental toughness.

WHAT WILL TAKING PART INVOLVE?

To take part in this study you must sign your initials on the debriefing sheet to give consent to take part. Then you will be asked to complete a questionnaire on paper in Straight Blast Gym, total participation should take under 20 minutes.

WHY HAVE YOU BEEN INVITED TO TAKE PART?

You have been chosen as this is a reputation gym that obtains tough fighters and fit the criteria needed for this study. You must be over the age of 18 years old.

DO YOU HAVE TO TAKE PART?

Participation for this study is completely voluntary and you can withdraw from this study at any time you wish, you can skip certain questions if you wish and also there will be no consequence for withdrawal.

WHAT ARE THE POSSIBLE RISKS AND BENEFITS OF TAKING PART?

Taking part in this study will not pose any physical risk to the participant, nor will it hurt their reputation as it is completely anonymous. If you feel any distress from this study there is a hotline number provided if you would like to gain support from another service.

WILL TAKING PART BE CONFIDENTIAL?

Taking part in this study will be completely confidential, all participants will be given a debriefing sheet you must sign with you initials, the sheet will then be returned to the researcher then they will give the questionnaire. The questionnaire contains only non-identifiable questions. No recording devices will be used throughout the duration of this study.

WHAT WILL HAPPEN TO THE RESULTS OF THE STUDY?

The results of this study will then all be typed into a full research paper for me to submit in my final year project / dissertation. There are no other plans to use this study elsewhere.

WHO SHOULD YOU CONTACT FOR FURTHER INFORMATION?

Researcher:	Supervisor:
Contact: Emily Jones	Contact: Michael Cleary Gaffney
Email: x16470436@student.ncirl.ie	Email: Michael.clearly-gaffney@ncirl.ie

Thank you,

Emily Jones.