

**AGGRESSIVE AND ANGER BEHAVIOUR AFFECTS RANKING IN
TAEKWONDO COMPETITION**

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**AGGRESSIVE AND ANGER BEHAVIOUR AFFECTS RANKING IN
TAEKWONDO COMPETITION**

by

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the Master degree of Sciences (Exercise and Sports Science)**

July 2018

CERTIFICATE

This is to certify that the dissertation entitled

AGGRESSIVE AND ANGER BEHAVIOUR AFFECTS RANKING IN TAEKWONDO COMPETITION

Is the bona fide record of research work done by

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During the period from **January 2018**

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Under my supervision

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DECLARATION

I hereby declare that this dissertation is the result of my own investigations, except where otherwise stated and duly acknowledged. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at Universiti Sains Malaysia or other institutions. I grant Universiti Sains Malaysia the right to use the dissertation for reaching, research and promotional purposes.

.....

MUHAMMAD ASYRAF BIN QABIL ADAM

Date: 15/8/2018

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Aggressive and Anger Behaviour Affects Ranking in Taekwondo Competition

ABSTRACT

The objectives of this study is to investigate whether the level of aggression and anger are related to the taekwondo score. 379 Taekwondo athletes were recruited for this study. Participants completed a set of questionnaires of Competitive Anger and Aggressive Scale (CAAS) the data collected had been analysed. The results of this study revealed that, taekwondo performance was not affected by aggressiveness. In addition, anger was also not correlated with taekwondo performance. Plus, the results of this study also revealed that there was no association between aggressiveness and anger.

**Sikap agresif dan sikap kemarahan sebagai satu faktor untuk
mendapat tempat di dalam pertandingan taekwondo**

ABSTRAK

Objektif bagi kajian ini adalah untuk mengkaji perhubungan di antara sikap agresif, kemarahan dan pencapaian di dalam pertandingan taekwondo. Sebanyak 379 orang atlet Taekwondo telah dipilih untuk menyertai kajian ini. Peserta melengkapkan satu set borang soal selidik. Data telah dianalisis. Keputusan kajian ini mendapati bahawa sikap agresif tidak berhubungkait dengan faktor untuk mendapat tempat di pertandingan taekwondo. Selain itu, sikap kemarahan juga tidak berhubungkait dengan faktor untuk mendapat tempat di pertandingan taekwondo. Tambahan itu, keputusan kajian mendapati bahawa sikap agresif tidak berhubungkait dengan sikap kemarahan.

CHAPTER 1

INTRODUCTION

1.1 Background of Study

Taekwondo is a Korean word, consisting of three parts, each representing a unique meaning. Tae refers to “foot,” “leg,” or “to step on.” Kwon indicates “fist,” or “fight.” Do means the “way,” or “discipline.” Therefore it literally means “the right way of using feet and fists,” (MyungWoo,2004). Taekwondo is a Korean martial art that was originally taught for warfare, self-defense and physical fitness (Sullivan, et al., 2009). However, it is now a global sport practiced in over 200 countries, and can be claimed to have achieved worldwide impact (MyungWoo,2004). It has inherent connotations of controlling aggression in others and keeping the peace because taekwondo also means “to put fists under control” or “to step on fists” (MyungWoo,2004).

Taekwondo is a traditional Korean martial art that teaches someone how to defend and when to attack. Sparring is one of the discipline in taekwondo disicipline. Sparring in taekwondo can be divided into eight categories which are flyweight (Men :35kg-54kg, women:30kg-46kg) bantamweight (Men:55kg-58kg, women :47kg-49kg), featherweight (Men:59kg-63kg, women:48kg-53kg), lightweight (Men:64kg-68kg, women:54kg-57kg), welterweight (Men:64kg-74kg, women :58kg-62kg), middleweight (Men:75kg-80kg, women:63kg-67kg), light heavyweight (Me:75kg-85kg, women:68kg-73kg) and heavyweight (Men:up to 85kg, women :up to 74kg) (WTF, 2009).

Furthermore, taekwondo competition areas is a two-shape area which are square-shape and octagonal shapes. However, competition area usually in a square-shape of 8m x 8m. Furthermore, the surrounding the contest area should be not smaller than 10m x 10m and no larger than 12m x 12m.

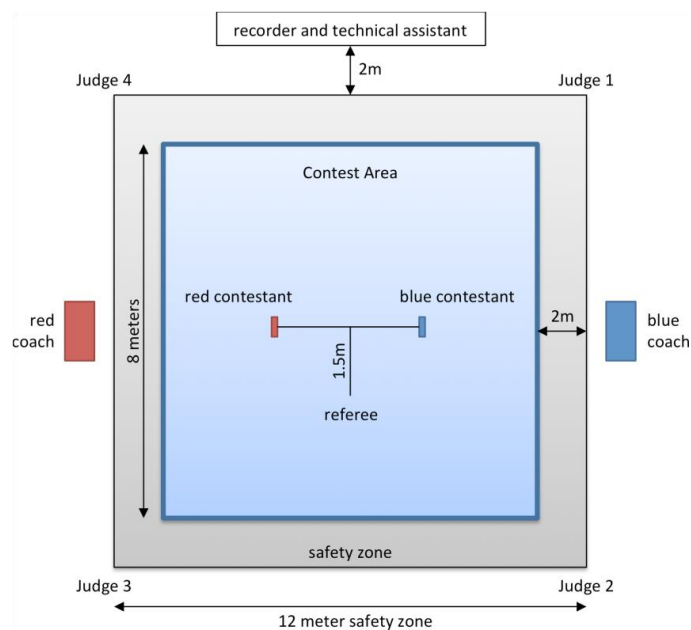


Figure 1.1 Competition Ring

Taekwondo competition system is divided into two system which are single elimination tournament system and round robin system. The duration of each round may be adjusted to 1 minute x 3 rounds, 1 minute 30 seconds x 3 rounds or 2 minutes x 2 rounds upon the decision of the Technical Delegate of the Championships (World Taekwondo Federation, 2015).

According WTF (2015), there are two scoring areas in taekwondo which are the trunk and also the head. Scoring area that allowed on the trunk are the blue or the red coloured areas of the trunk protector.

Meanwhile, on the head, the scoring area is the entire head above the bottom line of the head protector. Point(s) will be awarded when a permitted technique is delivered to the permitted scoring areas of the trunk or the head, Three points are scored for kicks to the head, two points to the chest protector involving rotational kicks, and one point for punches and kicks that do not involve rotation of the body (WTF, 2009). As the power and accuracy of each blow are critical to the scoring system, they need to be measured well.

Previous research by Vecchio, et al., (2011) has shown that 70% of scores given by the referees are validated based on agreement with colleagues, and that in 17% of the matches, the results would have been different if all the points scored given by at least one of the referees would have been included (Navarro, Miyamoto, & Ranvaud, 2008). After the Athens Olympic Games in 2004, the WTF began to promote the inclusion of electronic body protectors (EBP) in their competitions. EBP are intended to protect the trunk of the athlete and at the same time allow more reliable and accurate score identification (Vecchio, et al,2011). However, points derived from blows to the head are still subjected to visual assessment by the referees in the system that is currently endorsed by the WTF (2009). When EBP is used, determination of the *validity* of the technique, level of impact, and/or valid contact to the scoring area shall be made by the electronic scoring system.

Each game have their own fouls and penalty based on prohibited act of player to opponent. Referring to WTF (2009), penalties shall be declared

by the referee. Prohibited acts penalized with “Gam-jeom (deduction penalty)” by referee. A “Gam-jeom” shall be counted as one (1) additional point for the opposing contestant. For example, following acts shall be classified as prohibited acts, and “Gam-jeom” shall be declared. Crossing the boundary line, falling down, avoiding or delaying the match, grabbing or pushing the opponent, lifting the leg to block or kicking the opponent’s leg to impede the opponent’s kicking attack, lifting a leg or kicking in the air for more than 3 seconds to impede opponent’s potential attacking movements, or kick was aiming to below the waist, hitting the opponent’s head with the hand, butting or attacking with the knee, and attacking the fallen opponent (WTF, 2009). When a coach or contestant commits excessive misconduct and does not follow the referee’s command the referee may declare a sanction request by raising a yellow card. In this case the Competition Supervisory Board shall investigate the coach’s behavior and determine whether a sanction is appropriate (WTF,2009). If a contestant intentionally and repeatedly refuses to comply with the Competition Rules or the referee’s orders, the referee may end the match and declare the opposing contestant the winner (WTF,2009). If the referee at the Inspection desk or officials in the Field of Play determines, in consultation with the EBS technician, if necessary, that a contestant or coach has attempted to manipulate the sensitivity of EBS sensor(s) or inappropriately alter the EBS so as to affect its performance, the contestant shall be disqualified. When a contestant receives ten (10) “Gam-jeom”, the referee shall declare the contestant loser by referee’s punitive declaration (WTF, 2017).

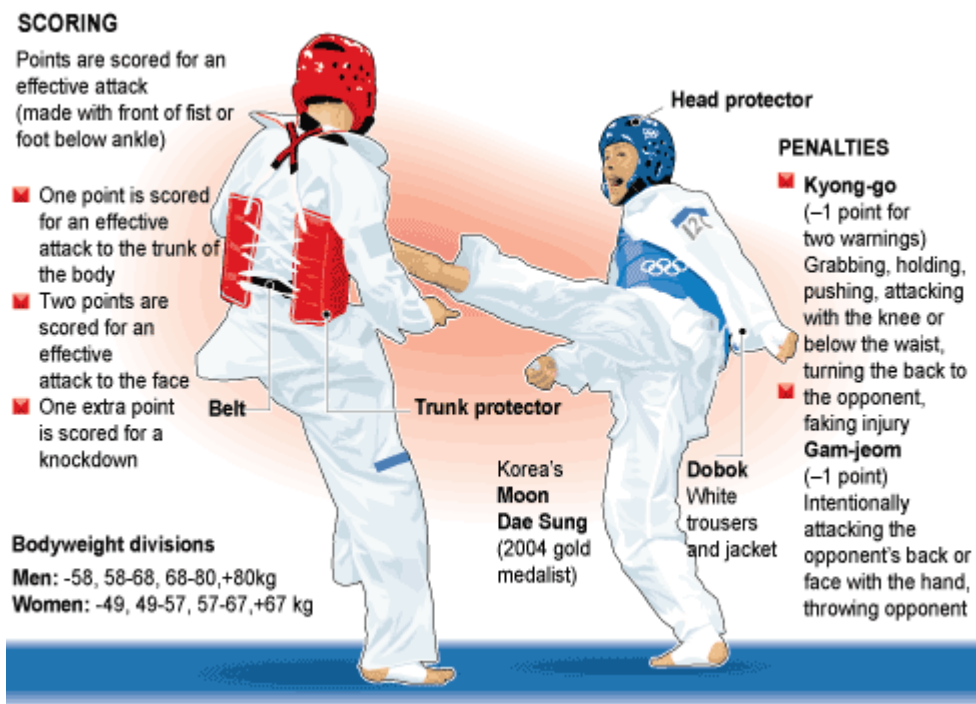


Figure 1.2 : Scoring and foul rule (Taekwondo Poomase, 2010)

In the event that the winner cannot be decided after 3 rounds (score tied), a 4th round (golden point round) will be conducted in one minute round (WTF, 2009). In case of a contest advances to a golden point round, all scores awarded during the first three rounds shall be void. The first contestant to score a point or whose opponent receives two “Gam-jeoms” in the golden point round shall be declared the winner. In the event that neither contestant has scored a point after the completion of the golden point round, the winner shall be decided by superiority based the following criteria the contestant who achieved a higher number of hits registered by the EBS during the golden point round, if number of hits registered by the

EBS is tied, the contestant who won more rounds in first three rounds will be declare as the winner, If number of round won is tied, the contestant who received less numbers of a Gam-jeom during all four rounds and if the three above criteria are the same, the referee and judges shall determine superiority based on the content of the golden point round If the superiority decision is tied among the referee and judges, the referee shall decide the winner. Athletes tend to be aggressive if they had tied score after three rounds and have to go to sudden death round because sudden death match player which attack first and receive point will declare as a winner in that round (Bouhlef, et al, 2006). Aggressiveness is one of essential factor for taekwondo.

Aggressiveness is defined as verbal or physical behaviours intended to harm another individual (Baron & Richardson, 1994), and can cause significant psychological and physical harm to its recipients (Stanger, et al, 2016). According to Lazarus's (1991), aggressiveness is conceptualized as one of the negative emotions that arise when the individual's ego-identity is at stake, namely, under the condition of threat appraisal. Specifically in the sports contexts, actions by coaches, opponents, spectators, and the individuals themselves may originate aggressiveness (Lazarus, 1991)

Another definition of aggressiveness is the disposition to become aggressive or acceptance of and willingness to use aggression (Maxwell & Moores, 2007). In sports, this emotion can be triggered by verbal provocation from an opponent, thoughts of revenge and negative self-talk

(Maxwell, 2004; Maxwell, Visek, & Moores, 2009). On the other hand, aggression may lead also to help a player to perform during the competition.

Anger is defined as the subjective evaluation that increased physiological arousal as a result of threat to one's physical or psychological wellbeing (Averill, 1983). Anger is often a precursor to aggression and is influenced by complex interactions between multiple personal and environmental variables, including neurological and endocrine processes as well as temperament (Deffenbacher, 1996). Pre-anger state and appraisal processes, as well as external events triggering memories and images, can interact to influence the internal experience of anger and the aggressive responses that follow.

Although anger is associated with aggression (Anestis, Anestis, Selby, & Joiner, 2009), it can be distinguished from it (Maxwell, Visek, & Moores, 2009). There is a comprehensive literature about the necessity of their distinction (Maxwell & Moores, 2007; Sukhodolsky, Gloub, & Cromwell, 2001). For example, Berkowitz (1988) viewed that anger and aggressiveness are some important antecedents of aggression. Anger and aggression are considered as relatively stable personal characteristics (trait like) and are not exclusively in sport. Previous study have shown that anger and aggression are positively associated with aggression in both contact and noncontact sports. This study is designed to examine the relationship between aggression with performance in taekwondo. Study related to taekwondo in aggressiveness and anger are less and need further study to improve performance during competition.

1.2 Objective

The general objective of this study is to investigate whether level of aggression and anger are different between winners and losers.

1.3 Specific objectives

- To determine the differences in player's aggressiveness between taekwondo and performance in competition.
- To determine the differences in player's anger between taekwondo and performance in competition.

1.3 Research hypothesis

H01 : There is no linear relationship between player aggressiveness and scores in taekwondo competition.

HA1 : There is a linear relationship between players' aggressiveness and scores in taekwondo competition.

H02 : There is no linear relationship between anger and score during taekwondo competition

HA2 : There is linear relationship between anger and score during taekwondo competition

1.4 Significance of study

This research will provide baseline data in sparring training especially in tactical taekwondo training on can be based upon and can be used for future training programme.

CHAPTER 2

LITERATURE REVIEW

2.1 Aggression

Aggressiveness is defined as a mode of communication and behaviour intended to harm another living organism either physically or psychologically or willingness to behave aggressively (Malinauskas, Dumciene, & Malinauskiene, 2014). Aggression can also be defined as any behaviour directed towards another individual that is carried out with the proximate (immediate) intent to cause harm. In addition, aggressive behaviour will harm the target and that the target is motivated to avoid the behaviour (Bushman & Anderson, 2001). Baron and Richardson (1994) define aggression as "...any form of behaviour directed towards the goal of harming or injuring another living being who is motivated to avoid". However, in the context of sport, aggression typically refers to a tendency to force actions (Kerr, 2004), directly resulting in the experience of either positive (e.g. a successful kick or punch) or negative (e.g. punch on the head or sanction for dangerous behaviour) outcomes. Aggression can be perceived both to benefit performance by increasing motivation and facilitating the mobilisation of energy and to harm performance by affecting concentration (Ruiz & Hanin, 2004).

Subdivision of aggressiveness is sanctioned and unsanctioned aggression. Sanctioned aggression is any behaviour that falls within a

particular sport's rules or is widely accepted (Kerr, 1999). For example, taekwondo player use her/his aggression to the kick opponent head and make them unconscious, which is legal according to taekwondo rules. Conversely, unsanctioned aggression falls outside the rules of the game (Maxwell, Visek, & Moores, 2009). For example, taekwondo players kick the opponents in unready position such as trying to standing up during the match. Generally, aggression is assumed only if harm is caused intentionally (Maxwell, Visek, & Moores, 2009). Both anger and aggressiveness are relatively stable personality characteristics (i.e. trait like) and not sport specific. Although individuals with high levels of aggressiveness may be attracted to combat sports (Maxwell & Moores, 2007).

2.2 Anger

Anger is defined as “a psychobiological emotional state or condition that consists of feelings that vary in intensity from mild irritation or annoyance to intense fury and rage, accompanied by activation and of neuroendocrine processes and arousal of the autonomic nervous system” (Spielberger, 1999). According to Spielberger (1999), the experience of anger can be conceptualised as state anger and/or trait anger. State anger is defined as a psychobiological emotional state condition characterised by subjective feelings that vary in intensity from mild irritation or annoyance to intense rage. Trait anger is defined as ‘individual differences in the disposition to perceive a wide range of situations as annoying or frustrating

and by the tendency to respond to such situations with elevations in state anger' (Spielberger,1999).

The concept of anger is associated with that of aggression and a display of aggressive behaviour causes anger (Balkaya, 2001). Anger is experienced and expressed as aggressive behaviour in the athletic domain, particularly in combative and contact sports such as ice-hockey, American football, boxing, soccer, swimming, taekwondo and karate (Maxwell, 2004; Ruiz et al., 2004). Despite taekwondo's respectable background, some authorities have claimed that its participants' anger and aggression levels are higher than in other sports (Lapa, et al.,2013). The degree of anger displayed by practitioners of taekwondo is relevant when considering the underlying philosophy of taekwondo which encourages virtuous behaviors such as being better people; the protection of the powerless and the control of anger and aggression (Lapa, et al.,2013). Spielberger (1999) as cited in Özer (1984) considered the feeling of anger as a consistent state, whereas they identify the state of anger as tension, anger and being irate as a result of the behaviour related to the goal being prevented and they also explain consistent anger as a concept which reflects how often the state of anger is felt.

2.3 Theory of Aggression

2.3.1 Cognitive neoassociation theory

In cognitive neoassociation theory, aggressive thoughts, emotions, and behavioural tendencies are linked together in memory (Collins & Loftus 1975). Negative affects produced by unpleasant experiences automatically stimulates various thoughts, memories, expressive motor reactions, and physiological responses associated with both fight and flight tendencies (Anderson & Bushman, 2002). This theory also includes higher-order cognitive processes, such as appraisals and attributions (Anderson & Bushman, 2002). Cognitive neoassociation theory provides a causal mechanism for explaining why aversive events increase aggressive inclinations, via negative affect (Berkowitz 1989). Within this theory, aggression can be one of the factors that influence taekwondo performance. Players can recall what happen and what they felt on their first losing fight. As they recalled the memories, their emotion, behavioural of aggressiveness and aggressive thoughts become slightly higher compared to their first participation of tournament.

2.3.2 Social Learning Theory

Social learning theories (Bandura 1983, 2001; Mischel 1973, 1999; Mischel & Shoda 1995), viewed that peoples acquired aggressive responses the same way they acquire other complex forms of social behaviour, either by direct experience or by observing others. As example, a coach tend to teach aggressive fight skill during training and specific

aggressive skill during competition making his students tend to follow his style as their coach is their role model.

Social learning theory has received support from research examining aggression in sport. For example Celozzi, Kazelskis and Gutsch (1981) found that watching a violent ice hockey match increased aggression in persons with high trait aggression scores but talking about violent hockey matches did not. This suggests, indirectly, that aggressive behaviour is learned via observation of others accomplishing their goals through the use of violence. Smith (1988) observed young ice hockey players imitating the aggressive actions committed by professional players. Aggression in ice hockey is actively supported and encouraged; therefore, young children can quickly learn from 'expert' role models that aggression is an acceptable and often desired behaviour (Weinberg & Gould, 1999).

2.3.3 Social Interaction Theory

Social interaction theory (Tedeschi & Felson 1994) interprets aggressive behaviour (or coercive actions) as social influence behaviour. (i.e., an actor uses coercive actions to produce some change in the target's behaviour.) According to this theory, the actor is a decision-maker whose choices are directed by the expected rewards, costs, and probabilities of obtaining different outcomes (Anderson & Bushman, 2002). This theory views that aggression is often the result of threats to high self-esteem, especially to unwarranted high self-esteem (i.e., narcissism) (Baumeister et al. 1996, Bushman & Baumeister 1998).

2.4 Condition of aggressive behaviour

Vasta, Haith, and Miller (1995) believed that the level of aggression in the individual is maintained at the same level for long time. In the study by Graczyk, Hucinski, Norkowski, Pęczak-graczyk and Rozanowska (2010), it was found that the assessment for children aged 8, could predict aggression and anti-social attitudes at the age of 30. This study also revealed that practicing sports may be either stimulator or reducer of aggressive behaviour,

The level of stability in aggression are have genetic and biological explanations some aggressive behaviors may be connected with the growing quantity of aggressive scenes watched on television or other medias (Graczyk, et al.,2010). Watching cruel, aggressive scenes enforces aggressive behavior and teaches new forms of aggression (Graczyk, et al.,2010). Futhermore according to Aronson, Wilson, & Akert (1997), children who watch the films with aggressive scenes are much more aggressive than those who do not. Moreover, people of different social status have different levels of aggression and young people from lower class showed higher levels of aggressiveness than those from middle and upper classes. Graczyk et al.(2010) also claim that the differentiation is related to the fact that those young people from lower class lived in a more aggressive environment. Thus, social status greatly influences the aggression.

Graczyk et al.,(2010) viewed that the non-adaptation and individual social development may be influenced by the individual life such as broken families, lack of parental love, strict discipline, material deprivation and corporal punishment may result in non-adaptation and individual's social development. Tuner and Helms (1999) also noticed that styles of education and parent's educational methods may affect their children's anti-social attitudes. Therefore poor self-confidence, lack of self-reliance and bigger aggression may be developed in teenagers. Kmiecik-Baran (1999) indicated that aggressive youngsters tend to experience much more sexual and emotional abuses. Furthermore, the researcher claimed that the level of fear – as an individual feature, and as a state in aggressive people, is higher than in those non-aggressive. It seems that aggression is a way of diminishing fear in hard situations (Graczyk, etc,2010).

2.5 The relationship between aggression and sport

In some sports, certain form of aggressiveness is considered necessary. Based on Epuran, Holdevici, and Tonița (2001) study, it is shown that successful athletes not only are aggressive, but are more inclined to express their aggressiveness in comparison to non-athletes. The performance of athletes and the use of aggression may therefore be an important component of sport performance (Leedy, 2000; Ogles & Masters, 2003). Aggression may therefore provides some indication of a competitor's strength and physical capability to the performance of athlete in sport. Furthermore, according to Karolczak-Biernacka (1998) "sport may be

described as the field with mood of aggression where aggressive behavior derives from the nature of performed actions, it is purposely produced and rewarded. The competitiveness of athletes and the use of aggression may therefore be important components of sport. Aggression in sport manifests itself in two forms: non-destructive connected with assertiveness, self defence attitude pursuing goals; and quick-tempered which is manifested by destruction, anger, revenge and fury (Abrams, Hale, & Anger, 2005).

2.6 Aggression effect on performance

Maxwell, Moores and Chow (2007) study has shown that provocation was the strongest correlate of self-reported frequency of aggressive behaviours followed by thoughts of revenge. Provocation is defined as any behaviour that is judged by the victim as aversive or unpleasant, normally with intent on the part of the perpetrator implicitly assumed, and rousing feelings of anger, frustration, or fear (Maxwell, Moores & Chow, 2007). Aggressive acts often follow perceived threat, whether intentional or not, in a tit-for-tat manner and can sometimes escalate into violently physical exchanges (Russell, 1974; Shergill, Bays, Frith, & Wolpert, 2003). Negative thoughts following provocation are likely to play a significant part in this process, particularly when opportunities to aggress are frequent (Maxwell, Moores & Chow, 2007). The process of repeatedly thinking about retaliation following provocation fits neatly within frustration-aggression models (Berkowitz, 1993). Berkowitz (1993) proposed links between frustration and aggressive behavior mediated by cognitive, emotional, motivational, and

situational factors. For example, a verbally provoked athlete (frustration) becomes angry (negative emotional reaction) and continually thinks about the event (cognitive rumination). In turn, this tends to increase or maintain angry feelings, and the athlete decides to exact revenge (behavioural motivation) when the opportunity arises (situational accommodation). Positive relationships were found among measures of anger, aggressiveness, anger expression, and provocation, but negative relationships with measures of anger control (Maxwell, Visek & Moores, 2009). Maxwell (2004) provides evidence that the tendency to have ruminative thoughts of revenge was associated with provocation and self-reported propensity to aggress.

Aggression in sport has been associated with situational factors such as game location (Keltikangas-Jarvinen & Kelnonen, 1988), home team advantage (Varca, 1980), competition level (Butt & Cox, 1992), and frequency of competition (Widmeyer & McGuire, 1997). There is other factor affecting taekwondo performance such as execution distance (e.g., Falco et al., 2009;), and the kind of technique (i.e. Gullett & Dapena, 2008; Estevan, Jandacka & Falco, 2016) in particular, knowledge is lacking about other factors that can affect performance, such as the stance position. In combat sports such as taekwondo, athlete try to hit their opponent with as much speed and power as possible (Gullett & Dapena, 2008). Although athlete may use both their fists and feet, kicks are more common in both training and competition (Kazemi et al, 2009). Moving forward and starting position also can contribute to aggressiveness of taekwondo players, for

example the kick start is used as a sprint start which is a complex motor task characterised by large forces exerted in different directions and by the ability to generate these forces in a short period of time (Fortier, Basset, Mbourou, Favérial, & Teasdale, 2005). In taekwondo, Estevan, Falco, et al. (2011) found in a pilot study that the execution time when starting from the lateral stance position (90°) are longer than those when starting from the forward (0°) and diagonal (45°) stance positions. 45° stance position as the most effective position in combat. (Estevan, et al., 2011). Therefore, the starting position could be a key factor in the sport performance of taekwondo athletes seeking to execute offensive or defensive movements. (Estevan, Jandacka & Falco, 2013).

CHAPTER 3

METHODOLOGY

3.1 Research Design

The research design used to determine the differences anger, aggressiveness and performance in taekwondo tournament is a survey based design.

3.2 Participant

The total number of participants recruited in this study was 379 taekwondo players. The age range for taekwondo player was from 10 years old until 17 years old including males and females. The participated in competitions between 2016 and 2017

3.2.1 Inclusion

Inclusion criteria is currently active in taekwondo training and competition

3.2.2 Exclusion

Exclusion for this participant is player aged 10 years and below and athletes who have never participated in any competition. Furthermore, athletes who were unable to read were also excluded from this study.

3.3 Sample size calculation

Simple random sampling methods was used in this study. The sample size was determined using population proportion estimate proposed by Daniel (1999). Using an estimated population of 50,000 taekwondo players (Daniel, 1999), a precision of 5%, and the z-value of 1.96, the required sample size was 379.

3.4 Instrument

Aggressiveness and anger were measured using Competitive Anger and Aggressiveness Scale (CAAS) (Maxwell & Moores, 2007). CAAS consists of 12 questions and it is divided into two sections which are 6 questions on anger and the other 6 is on aggressiveness. Respondents have to rate on a 5-point scale; ranging between (1)-almost never; (5)-almost always. Their internal reliabilities of the two subscales were acceptable (aggressiveness: $\alpha=0.83-0.84$; anger: $\alpha=0.78-0.83$) as were test– retest correlations (aggressiveness: $r = 0.84$; anger: $r =0.86$) (Maxwell & Moores, 2007). For ranking in Taekwondo, points scored and competition outcome (winning/losing) were used as measurement of performance of the athletes.

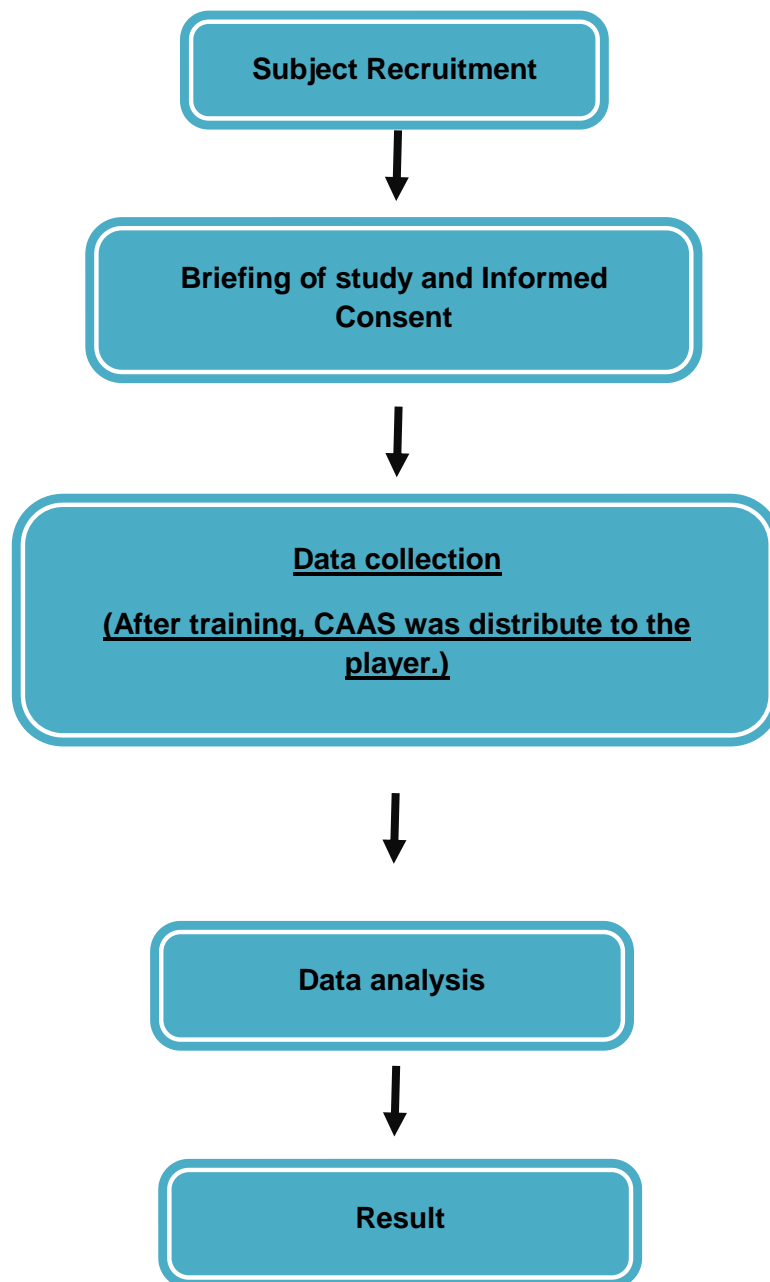
3.5 Procedures

After obtaining the ethical approval from Human Research Ethics Committee of Universiti Sains Malaysia, the meeting session was carried out between the researchers' team and the taekwondo club instructors.

During the first meeting, a short briefing regarding the study was given to the athletes after getting the permission from the taekwondo club instructors. During the briefing, athletes were given the detail explanation regarding the objective, procedure, benefits and risks, possible discomfort experiences in this study. It was emphasized that participation in this study was voluntary. They were permitted to withdraw from this study at any time during the course of the study period without any penalty. At the end of briefing, the research information was distributed to athletes along with the informed consent form for themselves and their parents or guardians. Parents were required to sign the Parent/Guardian Consent Form whereas students signed the Consent Form.

The data collection process was completed in one session. The instruction directed participants to answer the questionnaire individually. The CAAS questionnaire was administrated to the athletes after they finished the training. Participants took approximately 15 minutes to complete the questionnaire. The questionnaire was administrated at the training venue.

3.6 Flow Chart of the research



3.7 Data analysis

Statistical analyses were conducted using the Statistical Package for Social Science (SPSS) Version 20.0. Descriptive statistics (mean, standard deviation, frequency and average) were used to screen and describe the sample. The differences in aggressive, anger and performance in tournament were analysed using One-Way Anova. The significance level (α) was set at 0.05.

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