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PERCEPTIONS OF THE CONTRIBUTION OF PSYCHOLOGY TO SUCCESS IN ELITE KICKBOXING

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ABSTRACT
The study used semi-structured interviews to explore the views of three high performance kickboxers regarding the contribution of psychology to the development and maintenance of expert performance within kickboxing. The results provide a useful insight into the experiences of high performance kickboxers, identifying those mental skills and psychological attributes that are perceived to contribute to success. Participants identified seven mental skills that they believed to be linked to success in kickboxing; 1) effective use of self-talk, 2) relaxation, 3) heightened concentration, 4) self-regulation of arousal, 5) goal setting, 6) coping with being hit, and 7) imagery. Three psychological characteristics were identified by all participants as contributing to success, 1) high self-efficacy, 2) highly motivated and 3) mental toughness. Although not specifically identified by participants, it is suggested that a fourth psychological characteristic was also apparent. Participants demonstrated varying degrees of emotional intelligence thorough their ability to monitor and manipulate their emotional states prior to and during competition. Martial artists used a number of long and short-term psychological strategies in preparing for competition. Furthermore, whilst mental skills were not systematically practiced, all participants endeavored to integrate some form of mental training within physical training. It is recommended that sport psychologists help martial artists develop and refine individualized mental training routines, assisting with the formal integration of psychological training into physical training. Martial artists spend the majority of their time practicing as opposed to competing. As such, the integration of mental skills training within physical training may help ensure quality practice, and facilitate the effective transfer of mental skills into competition.

KEY WORDS: Kickboxing, mental skills, psychological attributes, expert performance.

INTRODUCTION

The application of mental skills in sports is linked with the development and maintenance of expert performance in sport (Durand-Bush and Salmela, 2002; Orlick, 2000). Research identifies a number of psychological variables that are linked with enhanced performance in martial arts. These variables comprise of psychological skills including: concentration (Williams and Elliott, 1999), relaxation and controlling anxiety (Chapman et al., 1997; Taylor, 1996; Williams and Elliott, 1999), goal setting (King and Williams, 1997), visual search strategies (Williams and Elliott, 1999), imagery (Weinberg et al., 1981) and self-talk (Ferrari, 1999; Williams and Leffingwell, 1996). Other psychological variables comprise of those personal characteristics that may impact upon performance including confidence (Chapman et al., 1997; Durand-Bush and Salmela, 2002; Williams

and Leffingwell, 1996) and motivation (Durand-Bush and Salmela, 2002). The need to tailor mental skills training to the specific needs of an individual is acknowledged by many sport psychologists (Seabourne et al., 1984; 1985). Given the growing body of evidence linking mental skills to enhanced performance in martial arts (Chapman et al., 1997; Ferrari, 1999; King and Williams, 1997; Taylor, 1996; Williams and Elliott, 1999), an individualized mental skills training program should be part of a martial artists training.

Weinberg and Comar (1994) suggested that in order to develop mental skills, they must be systematically practiced and integrated within physical skills training. Williams and colleagues (Williams and Elliott, 1999; Williams and Grant, 1999) found that skilled martial artists (Karate) have better perceptual and anticipatory skills when compared with novice martial artists. They suggest that these skills are acquired through experience, a finding consistent with the sentiments of Weinberg and Comar (1994). The development of these mental skills could be accelerated by appropriate training, exposing performers to the same constraints as those experienced during competition could develop a martial artist's ability to focus on task relevant cues (Williams and Elliott, 1999). Whilst there is an increasing body of research which identifies the contribution of mental skills to success in martial arts, and the need to integrate mental skills training within physical training, research suggests that the mental skills applied by martial artists may not be systematically taught (Williams and Elliott, 1999). The majority of martial artists do not have access to sport psychologists and as such, their first experiences concerning the psychology of martial arts will come from their mentors/ instructors. The present paper explores the views of high performance kickboxers regarding the contribution of psychology to the development and maintenance of expert performance within kickboxing, in particular the role of mental training in the development of excellence.

METHODS

Participants

All athletes provided informed consent before participating in the present study. Participants were 3 volunteer kickboxers; participant numbers have been used in order to maintain anonymity. Participant#1 is 50 years of age and has now retired having competed in full and semi-contact kickboxing for over twenty years. His best result was third place in the world full contact championships. He has won numerous British titles, has been British full contact champion and winner of the FSK and MAI masters division. He prides himself on having beaten a number of World champions during his kickboxing career. His coaching accomplishments are also well recognized having been awarded instructor of the year by Martial Arts illustrated. Participant#2 is 34 years of age; she has fought in semi, light and full contact kickboxing. She has won over 20 British titles and held the European title in 1997 and 2003. She successfully defended her World title in full contact kickboxing from 1996 through to 2000 when she had to relinquish it due to pregnancy. Participant#1 and #2 have been married for 13 years and between them have trained several fighters to become World champion. Participant#1 and #2 were interviewed together in the dual interview. Participant#3 completed an individual interview. He is 27 years old and competes in semi-contact Kickboxing. He was World silver medalist in 2001, World champion in 2003, European champion in 1999, and has numerous British titles.

Exploring the experiences of small number of participants is an acknowledged limitation of the present study, and as such, the findings presented are not representative of the general kickboxing population. However, given their accomplishments, their views regarding the contribution of psychology to success in elite kickboxing serve to highlight those areas that could, and arguably should be subject to further empirical scrutiny.

Data collection

One individual and one dual interview were used to ascertain and explore those psychological attributes that were identified by elite kickboxers as contributing to excellence. The same question schedule was used for the individual interview and dual interview. This was to ensure each interview was as consistent as possible in terms of depth and complexity. This semi-structured interview allowed participants to talk about their experiences in an informal way thus providing the opportunity and freedom to express their views and develop unexpected themes (Burgess, 1984). Examples of questions included 'What would you say are the mental or psychological aspects of kickboxing that are important for success?' and 'Have your views on the psychology of kickboxing changed as you have become more experienced?' Prompts were used to explore the responses offered in greater depth, as they are an effective technique to elicit additional information from participants (Krueger, 1994).

A dual interview was used for participant#1 and #2 because of their shared experiences. Participant#1 has been participant#2's coach since she was eleven years of age and has been the only coach she has ever worked with. Together they have

established, and manage one of the largest worldwide Kickboxing organizations, and have trained a number of fighters to become World champions. As such a dual interview would provide a greater insight into the success of their kickboxing partnership. Cox and Thompson (2000) found dual interviews to be the most satisfactory way of eliciting information as it gave each participant the opportunity to speak, but they also 'sparked off' conversation with each other and tended to 'keep each other honest' (2000, p.5).

Data analysis

All interviews were transcribed verbatim. In order to check the interview transcripts for accuracy of representation and content, all athletes were provided with a copy of their interview transcripts to modify, add or omit comments as necessary. Consistent with previous qualitative investigations, an inductive-deductive approach to data analysis was used in the present study (Charmaz, 2000; Esterberg, 2002). An inductive analysis of interview data ensured an accurate representation of the contribution of psychology to success discussed by participants. Deductive procedures were utilized in that prior knowledge concerning the contribution of psychology to success helped interpret the data. Reliability criteria were met through continued discussions between the author and participants to ensure continued accuracy of representation. Results are presented in the form of direct quotations in an attempt to accurately reflect the views and experiences of participants.

RESULTS AND DISCUSSION

A review of those studies exploring the psychological factors linked to success in martial arts identifies seven mental skills and two psychological characteristics linked to excellence. These mental skills include; 1) visual search strategies, 2) effective use of self-talk, 3) relaxation, 4) heightened concentration, 5) self-regulation of arousal, 6) goal setting, and 7) imagery. The psychological characteristics linked to success include high self-efficacy and motivation. Within the present study, partial support is offered for the findings of past research, with the exception of visual search strategies participants identified the same mental skills as contributing to success. Due to the specific demands of the sport, this study also suggests that coping with being hit and hitting is a mental skill associated with kickboxing success. Coping with this unique stressor was evidenced in the psychological characteristics identified by participants as contributing to success. In addition to high self-efficacy and motivation, all participants believed that mental toughness was a requirement for success. Despite agreement concerning the mental skills and psychological characteristics contributing to success, all participants emphasized the importance of developing an individualized style of fighting and mental preparation. In presenting the key findings of the present study data will be presented as pre-competition, competition and post-competition strategies.

Pre-competition strategies

When exploring the psychology of kickboxing, a number of pre-competition factors emerged. These will be discussed in a time to event manner. Long-term strategies will be explored first, followed by the consideration of short-term strategies.

Long-term strategies

All three participants identified appropriate training as extremely important. Appropriate training was determined by the intensity of training, the skills addressed in the training and the adaptation of training. The integration of goal setting within training was also considered to be important by all participants. This included short and long-term goals and the careful consideration of goal attainment. Participant#1 talked about the need to set training goals for upcoming fights, and adapt training to accomplish these goals: *"You restructure your training like even hitting a punch bag is different because you're doing it for an aim, when participant#2 used to fight for full contact the one time I even stuck a picture of the person she was fighting on the bag and wouldn't let her go home till she completely blasted that picture off".*

Research indicates that athletes set goals for competition and training (Munroe-Chandler, et al., 2004; Weinberg et al., 2000), and that these have motivational and performance enhancing effects (Kyllo and Landers, 1995; Weinberg, 1992; Weinberg et al., 2000). Meta-analyses in sport and general goal-setting research strongly supports the contention that specific, challenging goals lead to greater performance gains than do-your-best goals, easy goals, or no goals (Klein et al., 1999; Kyllo and Landers, 1995; Locke and Latham, 1990a; 1990b). Klein et al. (1999) suggest that specific goals direct effort and attention towards those behaviors deemed necessary for successful performance.

The relationship between performance accomplishments in training and increased self-efficacy was also identified by all participants. Bandura (1977; 1997) identified a link between performance accomplishments and self-efficacy, and there is evidence supporting this relationship in the boxing environment (Lane, 2002). Although a number of strategies were identified by participants

as developing self-efficacy, training accomplishments were deemed to be the most important long-term strategy. This was discussed by participant#3, "*by training you get better, the more you train the better you get, the better you get the more confident you get and that's, it's actually easy but it's the hardest thing to do, that's for me the biggest thing to get you're confidence and this up here (taps head) is the most important"*. Bandura (1986, 1997) suggests that the most effective way to strengthen self-efficacy is to provide individuals with the opportunity to succeed at a task. Performance accomplishments provide new and relevant information concerning personal ability that is integrated into existing self-efficacy perceptions (Bandura, 1997).

Becoming desensitized to being hit was also considered by all participants to be an important objective of long-term training. The dialogue between participant#1 and #2 offered an interesting insight into the psychology of being hit.

Participant#1*: "Many a person we send out even for a semi-contact fight, the first time they get a smack in the gob they always look round open mouthed"*.

Participant#2*: It's the shock, the more you take one the more you get used to taking one, full contact fighters used to say to me, this sounds really mad I think it's the same probably with any contact sport, you actually get a bit of a thrill out of it, you get hit with quite a good shot sometimes you actually start to laugh and actually start to enjoy, not if you got dropped or something, but half of you is like 'I took that', so it feels good that you took it, you do, you have to get used to it."*

The psychology of being hit, and hitting an opponent is clearly an important aspect of combat sports and as such warrants further empirical attention.

Short-term strategies

Developing a pre-competition routine was identified as a key component of the short-term preparation for a fight. The content of the pre-competition routine varied considerably between fighters and they acknowledged the idiosyncrasies that influenced the process of developing a preferred routine. The pre-competition routines described by participants included elements of strategy development, self-talk/ verbal persuasion, imagery, observations/planning, emotional control, physical preparation, arousal management, body language/ posturing and in some instances intimidation.

Participant#3 described his pre-performance routine that typified the combination of physical and mental preparation. *"In the hours leading up I'm scoping the place seeing whose about, I'm picturing what I'm going to do on the mat, my favored techniques, how I'm going to apply it you know, I speak to a lot of other really good martial artists and they do the same you know, but I'll be doing physical stuff as well I'll be loosening up a little bit, … sharpness work just to get you ready for it you can't go in there stale it's important that you're ready and again get the pressure going just for a couple of seconds bang, and then pull off a little bit then again so you're in that rhythm when you're getting into the ring"*. A pre-performance routine should utilize strategies so that they complement each other and comprise the totality of the pre-performance routine (Singer, 2002). Pre-performance routines enable an athlete to control and direct emotions, thoughts, and attention immediately prior to and during performance (Crews et al., 2001).

Mental imagery was a key component of participants' pre-performance routine and was also utilized for longer term preparation and reflecting on performances. Participant#1 described his use of imagery as a fighter. *"I used to picture myself fighting them in ten minutes thinking 'oh the moment he tries that bugger on me I'm going to do this' and I actually go through the fight, actually fight them in my mind"*. Participant's descriptions of their imagery experiences indicate a multi-sensory experience with an emphasis on dynamic kinesthetic imagery. This concurs with the recommendations of Gould and Damarjian (1996) who suggested this type of imagery offered the greatest benefits to athletes.

Competition strategies

Emotional control was deemed to be critical for success during a fight, in particular the control of aggression, fear and anxiety. Participant#3 outlined the consequences of poor emotional control, *"if you can't control you're anger or you're aggression everything goes out the window… you tense up, body tenses up and then the whole fight goes out the window, as soon as you tense up you lose, especially in what I do because it's so fast and technical and precise, it's so fast that you only have to be off the ball just a little, half a degree and that's it you get caught"*. Participant#2 shared similar experiences, *"I'd say I lost that here (taps head) I didn't lose that from nothing else, I was scared of her and you know being scared is one thing, usually I'm not scared of a person, I'm scared of losing, … that day I was more scared of her because I just didn't believe I could beat her which is why I didn't"*. The experiences of these athletes can be empirically supported, for example, using the Profile of Mood States and the Competitive State Anxiety Inventory-2 with 208 brown and black belts (Karate), Terry

and Slade (1995) found that 93.5% of winners could be predicted on the basis of mood and anxiety. Chapman et al. (1997) also found that anxiety scores (CSAI-2) could predict 63% of winners and losers amongst Tae Kwon Do novices. The winners were lower on both somatic anxiety and cognitive anxiety.

With regards to emotional control, participant#3 described a technique he had developed and found to be effective, specifically for controlling his nerves, *"it can be to do with your breathing aspect as well and people don't realize how important breathing is, how you control you're emotions which is all done by your breathing really… like you're nervousness, if you're nervous and agitated I tend to breathe nice and deep, I mean I've never been taught this, this is how I deal with it yeah, you know breathe in through the nose take a big deep breath through to the stomach okay, and out through the mouth and just let it all go and take it from there really"*. Focused breathing and muscle relaxation such as this, has been found to regulate anxiety amongst martial artists (Seabourne, 1998; Weinberg et al., 1981). A pre-requisite for effectively coping with those negative emotions elicited by stressful events is emotional intelligence. Salovey and Mayer (1990, p. 189) define emotional intelligence as 'the ability to monitor one's own and other's emotions, to discriminate among them, and to guide one's thinking and actions'. Salovey et al. (1999, p.161) suggest that more emotionally intelligent individuals cope more successfully because they 'accurately perceive and appraise their emotional states, know how and when to express their feelings, and can effectively regulate their mood states'. Participant#3 demonstrates an ability to monitor his emotional state prior to and during competition and manipulate this using appropriate coping strategies, as such he demonstrates emotional intelligence.

Each participant described the intense concentration that they experienced when they performed well, and that this was the performance state they tried to attain when fighting. This state once attained is known as a flow state. Flow is an optimal psychological state characterized by a state of concentration so focused that there is absolute absorption in the activity (Csikszentmihalyi, 1990). There is evidence to suggest that flow is a peak performance state (Jackson and Roberts, 1992; McInman and Grove, 1991). When exploring the way in which flow states were achieved, participants suggested that over learning was necessary so that kickboxing skills could be produced during a fight without conscious processing. Participant#2 explained, "*I think that's part of being a good fighter it's being able to bring something out without thinking about it"*. Participant#3 concurred, "*you're in the zone where the techniques that you've practiced, you've learned, you've drilled … you're doing not thinking"*. These findings highlight the potential importance of repetition and over learning for aspiring kickboxers.

Self-talk was a strategy used by participants for instructional, motivational and emotional control**.** In the following excerpt, participant#3 described how being hit was an emotive experience "*no-one really likes getting hit, if I look at every one of my students the main thing is they don't want to get hit, no-one likes to get hit in the face or in the nose or whatever"*. Participant#3 had developed his use of self-talk to control his emotions when fighting**.** *"I just think 'oh I'm going to get scored on there', not hit, 'I'm going to get scored on', and that's what you want to try and get, the right positiveness make yourself positive that's so important the positive aspect is the biggest psychological thing you can have because you know if your heads not right and you don't believe it no-one else will"*. The findings of this study support the work of Williams and Leffingwell (1996) who suggest that self-talk can be used to correct bad habits, to focus attention, to modify intensity level, and increase self-efficacy.

Controlling body language was clearly identified by participants as a short-term pre-competition strategy, and was also perceived to be an important competition strategy. This typically involved elements of gamesmanship. For example, participant#2 explained, *"whenever I go to touch gloves I always bang gloves and glare into their face and I always stare them out … I will always stare them out all day and the time when they do this (looks away), they look away I know I've beaten them"*.

Post-competition

Post-competition, reflection was considered to be a natural and important element of a fighter's routine. Participant#3 suggested *"always reflect on your fight take the good things, throw away the bad things but still look at it, you know don't dwell on situations which I used to do because it doesn't work, it doesn't make any difference the fights gone… take the good bits make them better, take the bad bits make them better, you've got to be able to learn from you're mistakes and learn from the things that you did good"*. During self-reflection individuals self-evaluate, attribute causation, experience satisfaction, and adapt their performance (Kitsantas and Zimmerman, 2002).

Psychological characteristics linked to success

When describing the psychological attributes of a good fighter, three attributes were consistently identified by all participants. These were high self-

efficacy, motivated and mental toughness. Self-efficacy was identified by all participants as the main psychological attribute leading to success. Participant#2 believed that developing self-efficacy was the turning point in her kickboxing career. *"Because it took me a long time to believe in myself, when I did believe in myself I realized that that was the ticket, I try and put that across to them (students) I don't believe that anyone is better than anyone until they prove it, but you can make somebody better than you just by believing they're better than you, you know so I try and put a strong mental attitude across"*. Motivation was also considered by all participants to be necessary for success. Participant#2 explained: *"as you fight more and more you need to look for new things, I mean I was fighting week after week after week, winning week after week after week, and one day I just stopped, because I wasn't getting that buzz, ...I stopped for five years and I came back out and I won the Europeans, so they said, you still got it there and I said 'I know I got it there but I want it again'"*.

Finally, all participants agreed that a fighter could be an excellent technical fighter, but if they did not posses psychological hardiness they would not be a successful tournament fighter. Mental toughness is arguably one of the most important psychological attributes in achieving performance excellence (Gould et al., 1987; Jones et al., 2002; Williams, 1988). Williams (1988) suggested, "mental toughness may have more to do with winning than do such physical attributes as speed and power" (p. 60). The characteristics of mentally tough performers proposed in the literature have been wide ranging and include: high levels of optimism, self-efficacy, self-belief, self-esteem, desire, determination, commitment, focus and concentration, willpower, control, motivation, and courage (Bull et al., 1996; Goldberg, 1998; Graham and Yocom, 1990; Hodge, 1994; Pankey, 1993; Williams, 1988). Despite these differences of opinion a number of researchers agree that mental toughness is reflected in an athlete's ability to cope with stress and resultant anxiety associated with high-pressure competitive situations (Goldberg, 1998; Gould et al., 1987; Pankey, 1993; Williams, 1988).

APPLICATION OF MENTAL SKILLS TRAINING

Each martial artist considered it important to incorporate mental skills training within physical training. However their personal understanding of the psychology of fighting and the subsequent development of mental skills was developed over a long period of time. This process was influenced by instructors and other martial artists with whom they shared experiences, and was refined by experiential learning. As such their application of mental skills training was unsystematic and unstructured. All participants described an initial skepticism concerning the role of psychology in kickboxing, for example participant#1 suggested *"I'd probably have thought twenty-five years ago about the psychology of fighting I'd have thought what a load of s**t, you just smack them"*. Furthermore, all believed that as they became more experienced their appreciation of the contribution of psychology to the success of a martial artist increased. This was perhaps best summarized by participant#3 who stated *"when I first started I didn't think about it I just wanted to do a technique, ... and then you realize that you've got to be positive that's what my instructor always said to me, now I understand it, it's the most important thing, be positive believe you can achieve it and that's it, as long as you believe in it you'll get there"*.

The results of the present study offer clear implications for applied sport psychologists. Firstly, sport psychologists must carefully consider the way in which they offer support. It would appear unwise to emphasize the benefits of mental skills training at the cost of describing their application. According to theories of behavioral change, advice giving and focusing exclusively on the benefits of change may only result in counterarguments against change (Rollnick et al., 1999). Applied sport psychologists should consider behavior change counselling when proposing mental skills training (see Rollnick et al., 2002). During behavior change counselling the sport psychologist should encourage martial artists to make their own decisions with regards to behavior change. A trusting atmosphere should be developed to explore a martial artist's feelings about mental skills training and any resultant changes. When implementing mental training skills training and engaging in the process of change, martial artists should be encouraged to utilize self-reflection and evaluation prior to, during, and after training and competitions. Sport psychologists should formally reflect on change with martial artists to identify and work towards the resolution of any difficulties regarding the application of mental skills training.

Linking mental training with training activities also appears to be an important consideration in the development of mental skills. During training, martial artists learn and rehearse the necessary skills in order to improve tournament performance. McCann (1995) suggests that committed athletes spend up to 99% of their time in practice, as opposed to competition. The literature offers further support for the integration of mental skills into practice suggesting that it appears to be

influential on an athlete's success (Frey et al., 2003). Weinberg and Williams (1998) suggest that athletes who display a poor mental performance during practice (e.g. inability to concentrate, lack of motivation and application) invariably display the same behaviors during competition. Incorporating mental skills into physical practice will increase the chance of transferring these mental skills into competition (Barr and Hall, 1992; Vealey and Greenleaf, 1998; Weinberg and Comar, 1994; Weinberg and Williams, 1998). Practicing the application of mental skills during training allows them to become habitual and will also increase a martial artist's confidence in their outcome efficacy when used during competition. Conversely the immediate application of mental skills in competition may result in a negative experience. The use of an unfamiliar technique presented in the application of a new mental skill will require conscious processing on the part of the athlete and as such may detract valuable attentional resources away from competition (Weinberg and Williams, 1998). This may result in performance decrements and reduce the martial artist's efficacy expectancies regarding the intervention.

Durand-Bush and Salmela (2002) found that world and Olympic champions refined their psychological skills and strategies informally during daily activities and in conjunction with other training exercises. The results of the present study support the findings of Duran-Bush and Salmela (2002) suggesting that athletes can use different strategies and be creative as they develop and maintain those mental skills appropriate for kickboxing. There is clearly a need to revisit the suggestion that mental training should be structured and involve the use of specific performance enhancement techniques in order to be effective.

CONCLUSION

The results of this study identify the use of many short and long-term psychological strategies that have been passed down through Kickboxing generations and refined through personal experience. As a result of experiential learning all participants considered the psychological preparation of martial artists to be an important consideration for success. Their practices concerning the mental preparation for a fight varied considerably. Each participant possessed individualized pre-competition and competition practices intended to optimize their mental preparation for competition. This concurs with past research which suggests that psychological techniques used by athletes need to be tailored for the individual (Seabourne et al., 1984, 1985; Schinke, 2004). Psychological skills training should be integrated within physical skills training and rehearsed during training and simulated competition. Whilst all participants acknowledged the importance of psychological preparation for success, their application of mental skills training was unsystematic. Sport psychology consultants clearly have a role in helping athletes develop and refine individualized routines to formally integrate psychological training into physical training.

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KEY POINTS

- Perceptions of the contribution of psychology to success in high performance kickboxing was explored using semi-structured interviews.
- Seven mental skills and three psychological attributes were collectively identified by participants, which they perceived as being linked to success.
- The need to integrate mental skills training into physical training was identified. This is necessary to optimise training effectiveness, and as such should be a key objective of applied sport psychologists.

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