



## MENTAL TOUGHNESS: A COMPARATIVE STUDY ON KFUPM UNIVERSITY TEAMS

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### Abstract

Mental toughness is an attribute that is often associated with successful performance in competitions. Mental toughness and its importance in competitive Sports have been documented in literature (A.S. Goldberg, 1998; K. Hodge, 1994; J. Tunney, 1987; R.M. Williams, 1988). In sports, many things are left to chance as, sports are predictably unpredictable. Sports persons who enter the competitive arena soon realize that there is more to competition than simply learning the physical skills. It is one thing to possess the physical and mental skills and yet another to be able to use them when needed. Every athletic contest is a contest of control of the delicate mind-body connection, which is dramatically clear within the competitive arena (J.E. Loehr, 1982).

**Purpose:** 1. To compare the mental toughness between King Fahd University of Petroleum and Minerals (KFUPM) Judo and Karate teams; 2. To compare the mental toughness between KFUPM Swimming and Track & Field teams.

**Methods** A total of 26 players who are part of KFUPM Judo, Karate, Swimming and Track & Field University teams (2011-12) with age ranging from 18-20 years were selected as subjects for study and were divided into four groups namely; Judo (N= 6), Karate (N= 5), Swimming (N= 8) and Track & Field (N= 7). Mental toughness questionnaire of Tiwari and Sharma (2006) was administered to the subjects. The questionnaire consists of 48 statements and has six sub- scales namely: Self Confidence, Attention Control, Motivation, Goal Setting, Visual Imagery and Attitude Control. T- Test was applied to compare means between the groups. Statistical significance was set at 0.05 levels.

**Results** T- Test failed to reveal significant difference on mental toughness (MT) between KFUPM Judo and Karate teams ( $p = .7 > .05$ ). T-Test also failed to reveal significant difference on MT between KFUPM Swimming and Track & Field teams ( $p = .122 > .05$ ). T-Test revealed significant difference on Self Confidence between KFUPM Swimming and Track & Field teams ( $p = .039 < .05$ ), Track & Field team scored significantly higher on Self Confidence ( $M \pm SD = 30.71 \pm 3.7$ ) than Swimming team ( $M \pm SD = 26.1 \pm 4.01$ ). No significant difference were found on other sub- scales (Attention Control, Motivation, Goal Setting, Visual Imagery and Attitude Control) of mental toughness between Judo & Karate Teams and Swimming & Track & Field teams.

**Discussion** No significant difference was found on Overall Mental Toughness and its sub- scales between Judo and Karate team members of KFUPM. This could be largely due the similar nature of both the sports. Significant differences were not found on overall mental toughness and its sub scales except self-confidence between swimming and track & field team members of KFUPM. Track & Field team members of KFUPM found to be more self-confident as compared to swimming team members. Team preparation and training prior to competition could have increased the self-confidence of track & field team. According to L.C. Green and J. Wildman (2003) mentally tough athletes will be successful in accomplishing their goals and their confidence may be derived from past performance successes and mental and physical preparations, encouragement from coaches and peers.

**Key Words:** mental toughness, judo, karate, track & field, swimming.

### Introduction

In sports, many things are left to chance as, sports are predictably unpredictable. Sports persons who enter the competitive arena soon realize that there is more to competition than simply learning the physical skills. It is one thing to possess the physical and mental skills and yet another to be able to use them when needed. Every athletic contest is a contest of control of the delicate mind-body connection, which is dramatically clear within the competitive arena (J.E. Loehr, 1982).

Sports persons are also feeling the increasing pressure in sports and the negative consequences of these pressures. Players during match situations feel scared, because they fear

failure at every corner, due to which they become nervous, their muscles get tense, their stomach pains, body becomes tight, hands become clammy, and negative thoughts predominate them and hence they start believing that they will never win a big match (E. Bhambri, P.K. Dhillon & S.P. Sahni, 2005).

Considering the importance of mental toughness, coaches have agreed that mental toughness is a factor that could determine the success of an athlete (D. Gould, et al., 1987) and it is also seen as an important element that could shape a successful athlete to be a champion (E.K. Norris, 1999).

Mental toughness can be considered as a

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Received 21.01.2012 / Accepted 23.04.2012

mental skill factor. Some research findings has identified mental skills as a psychological construct that distinguishes between more and less successful performance across a number of sports; for example, golf (P.R. Thomas, R. Over, 1994), and equestrian, (M.C. Meyers et al., 1998).

Mental toughness and its importance in competitive Sports have been documented in literature (A.S. Goldberg, 1998; K. Hodge, 1994; J. Tunney, 1987; R.M. Williams, 1988). (E.K. Norris, 1999) also emphasized the importance of mental toughness in the making of a champion athlete. (D. Gould et al. 2002) studied the psychological characteristics of Olympic champions, and identified mental toughness as a significant contributor to sports performance enhancement.

The relationship between mental state and athlete's physical performance has been for concern for coaches and even for athletes for long time especially with the knowledge that the mental state does have enormous impact on athlete's performance (R.S. Weinberg, 1988).

The factor of mental toughness concludes that the athletes need to equip themselves with a package of a combined psychological skills starting in the early stage of involvement, training session, during and after the match (G. Jones, S. Hanton, D. Connaughton, 2007). This could be a factor that could determine both their success and failure. The mental psychology explained in this study focused more on the mental toughness of the athletes.

Mental toughness is an important skill to every athlete as this could help to prepare themselves when they are facing different situations in a tournament and it is also directly related to the athletes' performance and achievement (D. Anderson, 1995; A. Eric, 2006).

There are a lot previous studies on the relationship of the athletes' trained mental skills and how these skills influence each other (T.J. Davenport, 2006; J. Golby, M. Sheard, 2004; K.L. Krueger, 2002; K. Gary, R. Jolly, 2007; D. Lorentzen, 1981; A.R. Nicholls et al., 2008). This clearly shows that previous studies done also agreed that mental toughness could influence one's achievement in sport. Therefore, it is important to acknowledge the role of mental toughness and its influence in the achievement of the football team.

The concept of mental toughness in sport has long been explored and developed (A.S. Goldberg, 1998; J.E. Loehr 1986). Both athletes and coaches admitted that at least fifty percent of the success is influenced by psychological factors that are related to mental toughness (J.E. Loehr, 1982; 1986).

There are also some researchers who found out that when two teams who share the same strength, skills and tendency to win, 90% of the determining factor to be the champion depends on the mental aspect (B. Gouldsmith, 2006).

M. Rana (2009) examined the mental toughness and its influence on performance outcomes in competition. For this study 60 Indian Male National Wrestler competing in National championships at Indira Stadium Una Himachal were selected as sample. The Sample was further divided in two groups as per performance outcomes in competition one being successful wrestlers who had won the medals (n=30) and other group being non-successful wrestlers who had not won any medals in national Championship 2009. Psychological Performance Inventory (PPI; J.E. Loehr, 1986) was administered to measure the mental toughness to both the groups in this study. Analysis of the fundamental areas of mental toughness revealed that the successful wrestlers scored significantly higher on all sub-scales of mental toughness and significant differences were observed between two groups (successful and non-successful) in self-confidence ( $p = 0.001$ ), negative energy control ( $p = 0.019$ ). Attention Control ( $p = 0.011$ ), Visual / Imagery Control ( $p=0.266$ ), Motivational Level ( $p = 0.002$ ), Positive Energy ( $p = 0.001$ ) and Attitude Control ( $p = 0.012$ )

Mental toughness has recently emerged as an important psychological construct that is related to successful sports performance (D. Gucciardi, S. Gordon, J. Dimmock, 2009; G. Jones, S. Hanton, D. Connaughton, 2007; S. Bull, C. Shambrook, W. James, J. Brooks, 2005; D. Gould, K. Dienffenbach A. Moffett, 2002; P.J. Clough et al. 2002) suggested mental toughness is a trait-like construct that allows individuals to remain relatively unaffected by competition or adversity. A factor often associated with successful performance in competition is mental toughness.

### Objectives of the Study

1. To compare the mental toughness between King Fahd University of Petroleum and Minerals (KFUPM) Judo and Karate teams
2. To compare the mental toughness between KFUPM Swimming and Track & Field teams.

### Methods

A total of twenty six male sportspersons were selected as the subjects for the present study. The age of the subjects were ranging from 18-21 years. All the selected subjects represented KFUPM in the Inter University competitions in Saudi Arabia during the academic year 2011-12. Out of 26 Subjects, 6 represented KFUPM Judo team, 5 in KFUPM Karate team, 8 in KFUPM Swimming team and 7 in KFUPM Track & Field team. Each team formed one group. Comparison was made between Judo and Karate teams and Swimming and Track & Field teams. Mental toughness questionnaire of Tiwari and Sharma

(2006) was administered. The data was collected during training camp in the King Fahd University of Petroleum and Mineral campus.

**Instrument**

Mental toughness questionnaire of Tiwari and Sharma (2006) was administered. The questionnaire consists of 48 statements. These 48 statements are further divided into 6 sub-scales namely; Self Confidence, Attention Control, Motivation, Goal Setting, Visual and Imagery and Attitude Control which were designed to measure factors that reflect mental toughness of sports person.

**Data Analysis**

Descriptive statistics were computed for all measures. The data obtained were analyzed with the help of statistical software (SPSS 16 version). The mean, standard deviation along with t test were computed to check the differences between samples mean of Judo and Karate groups and Swimming and Track & Field groups. The level of statistical significance was set at 0.05 levels.

**Results**

**Table 1**  
**Mean and Standard Deviation of KFUPM Karate and Judo Team**

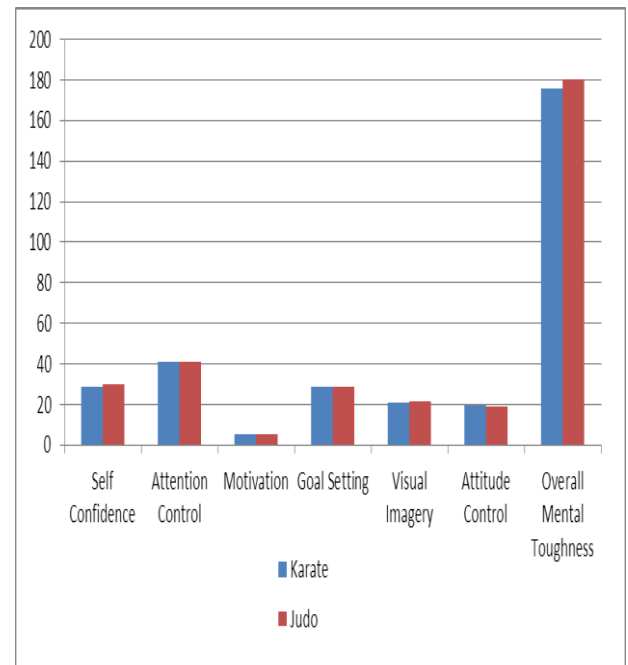
Sub Scale	Karate Team N = 6		Judo Team N = 5	
	Mean	SD	Mean	SD
Self Confidence	28.66	4.5	30.2	2.86
Attention Control	41.33	6.74	41.2	3.11
Motivation	5.68	2.32	5.14	2.3
Goal Setting	29	3.74	29	3.31
Visual Imagery	21.16	3.54	21.8	2.04
Attitude Control	19.83	2.92	19	2.23
Overall Mental Toughness	175.5	21.22	180	17.10

**Table 2**  
**Mean and Standard Deviation KFUPM Track & Field Team and Swimming Team**

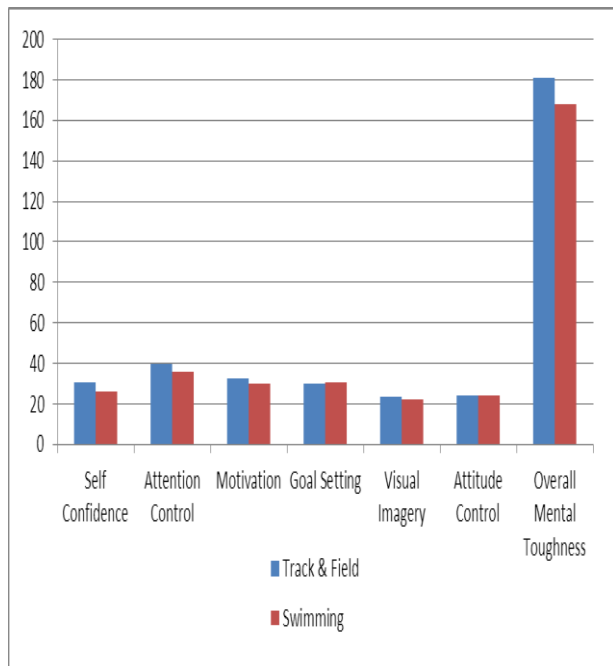
Sub Scale	Track & Field Team N = 5		Swimming Team N = 8	
	Mean	SD	Mean	SD

Self Confidence	30.71	3.7	26.1	4.01
Attention Control	39.71	3.4	35.62	5.75
Motivation	32.57	7.22	29.75	3.05
Goal Setting	30.14	3.28	30.37	2.26
Visual Imagery	23.2	3.25	22	2.77
Attitude Control	24.42	4.35	24.25	3.19
Overall Mental Toughness	180.85	14.46	168.12	15.31

**Fig.1 Mean Scores of Karate and Judo Teams**



**Fig. 2 Mean Scores of Track & Field and Swimming Teams**



**Table 3**  
Comparison of Mental Toughness between KFUPM Judo and Karate Teams

Sub Scale	T- value	df	P- value
Self Confidence	-.656	9	.528
Attention Control	.040	9	.969
Motivation	-1.060	9	.317
Goal Setting	.000	9	1.00
Visual Imagery	-.352	9	.733
Attitude Control	.521	9	.615
Overall Mental Toughness	-.398	9	.700

Analysis of results from table 3 revealed following:

**Self Confidence:** T test could not reveal any significant difference on self-confidence (SF) between KFUPM Judo & Karate teams ( $p = .528 > .05$ ).

**Attention Control:** T test could not reveal any significant difference on attention control (AC) between KFUPM Judo & Karate teams ( $p = .969 > .05$ ).

**Motivation:** T test could not reveal any significant difference on motivation (MO) between KFUPM Judo & Karate teams ( $p = .317 > .05$ ).

**Goal Setting:** T test could not reveal any significant difference on goal setting (GS) between KFUPM Judo & Karate teams ( $p = 1.00 > .05$ ).

**Visual Imagery:** T test could not reveal any significant difference on visual imagery (VI) between KFUPM Judo & Karate teams ( $p = .733 > .05$ ).

**Attitude:** T test could not reveal any significant difference on attitude (AT) between KFUPM Judo & Karate teams ( $p = .615 > .05$ ).

**Overall Mental Toughness:** T test could not reveal any significant difference on overall mental toughness (MT) between KFUPM Judo & Karate teams ( $p = .700 > .05$ ).

**Table 4**  
Comparison of Mental Toughness between KFUPM Track & Field and Swimming Teams

Sub Scale	T- value	df	P- value
Self Confidence	-2.294	9	.039*
Attention Control	-1.641	9	.125
Motivation	-.955	9	.357
Goal Setting	.161	9	.874
Visual Imagery	-.827	9	.423
Attitude Control	-.091	9	.929
Overall Mental Toughness	-1.655	9	.122

Analysis of results from table 4 revealed following:

**Self Confidence:** T test revealed significant difference on self-confidence (SF) between KFUPM Swimming and Track & Field teams ( $p = .039 > .05$ ).

**Attention Control:** T test could not reveal any significant difference on attention control (AC) between KFUPM Judo & Karate teams ( $p = .125 > .05$ ).

**Motivation:** T test could not reveal any significant difference on motivation (MO) between KFUPM Judo & Karate teams ( $p = .357 > .05$ ).

**Goal Setting:** T test could not reveal any significant difference on goal setting (GS) between KFUPM Judo & Karate teams ( $p = .874 > .05$ ).

**Visual Imagery:** T test could not reveal any significant difference on visual imagery (VI) between KFUPM Judo & Karate teams ( $p = .423 > .05$ ).



**Attitude:** T test could not reveal any significant difference on attitude (AT between KFUPM Judo & Karate teams ( $p = .929 > .05$ ).

**Overall Mental Toughness:** T test could not reveal any significant difference on overall mental toughness (MT) between KFUPM Judo & Karate teams ( $p = .122 > .05$ ).

### Discussions

No significant difference was found on Overall Mental Toughness and on all the sub scales between Judo and Karate team members of KFUPM. This could be largely due the similar nature of both sports. Significant difference was not found on overall mental toughness and on all its sub scales except self-confidence between swimming and track & field team members of KFUPM. Track & Field team members of KFUPM found to be more self-confident as compared to swimming team members. Team preparation and training prior to competition could have increased the level of self-confidence of track & field team members. According to L. Green and J. Wildman (2003) mentally tough athletes will be successful in accomplishing their goals and their confidence may be derived from past performance successes and mental and physical preparations, encouragement from coaches and peers. The past performance and success of KFUPM Track & Field could have affected and increased the level of self confidence in the team members.

### Conclusions

1. There were no significant differences on Attention Control, Motivation, Goal Setting, Visual and Imagery, Attitude Control and Overall mental toughness between KFUPM Judo and Karate team members.
2. There were significant differences on Self Confidence between KFUPM Swimming and Track & Field team members.
3. There were no significant differences on Self Confidence, Attention Control, Motivation, Goal Setting, Visual and Imagery, Attitude Control and Overall mental toughness between KFUPM Swimming and Track & Field team members.

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