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Original article

MENTAL TOUGHNESS BETWEEN ELITE EGYPTIAN ATHLETICS PLAYERS– COMPARATIVE STUDY

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Abstract

Aim. Trainers and athletes emphasize that psychological skills that reflect mental toughness contribute to at least 50% to achieving athletic achievement. Mental toughness is the most important in achieving athletic achievement. The purpose of this study was to validate and reliability the Egyptian version of Sport Mental Toughness Questionnaire" (SMTQ-14) and evaluate the mental toughness between elite athletics (track and field).

Methods. 126 athletes (female and male) from (soccer, basketball, volleyball, athletics, swimming) to validate and reliability of Sport Mental Toughness Questionnaire" (SMTQ-14)

The main sample contains Fifty-four athletics players from national team in Egypt participated in this study. (thirty-three players from track events (twenty-one male+ twelve female). twenty-one players from field events (fourteen male+ seven female).

Results. Statistical analyses showed that:
significantly different ($p < .05$) in subscales; confidence, constancy and Total SMTQ- 14 for track event players. No significantly different ($p > .05$) in control variable.

Conclusions. Under the conditions of our study, mental toughness differ according to the event type. These results have to be taken into account by instructors in order to better understand and be implicated in these concepts for technical effects of training.

Keywords: Mental Toughness, Athletics, SMTQ-14

Introduction

Athletics is a collection of sporting events that involve competitive running, jumping, throwing, and walking. The most common types of athletics competitions are track and field, road running, cross country running, and race walking.

The nature of high levels of Athletics requires the athlete to use his physical, skill, planning and psychological abilities in an integrated manner in order to try to achieve the best possible level.

The methods of preparation, skill and planning and principles have been very close in recent years and therefore the need for more psychological concerns has emerged.

Sports excellence depends on how well the players benefit from their psychic abilities in no less than the use of their physical abilities. Psychological abilities help individuals mobilize their physical abilities and energies to achieve maximum and best athletic performance, and can be developed through training and special programs for this purpose (training programs for psychological skills).

Psychological skills represent becoming an

important dimension in the preparation of players, it plays a key role in the development of performance and is seen as one of the variables that must be taken care of along with the physical requirements and skill and planning. Athletes at the international level converge significantly in terms of physical level, skill, and planning and determine the psychological outcome of players during the competition where they play a key role in winning.

The fact is that the coaches and all the workers are concerned with the physical, skill and planning aspects without any regard to the psychological aspect of the players' personality, despite the fact that sports performance in general depends on the player's physical, professional, planning and psychological skills.

According to (Mohamed, 1996) each sport activity requires special requirements of sports personality and sports activity in a group with distinctive characteristics. In order to succeed in a specific sport activity, certain traits must be available in the personality. Positive psychology will not be able to achieve the highest levels of physical and

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technical abilities because these characteristics directly affect the level of personality.

Since the 1970s, the number of multi-disciplinary investigations has increased rapidly in science.

However, the spread and development of practice in the field of sport psychology (Weinberg & Gould, 2003). One of these concepts is mental toughness.

Mental toughness by sportsmen and coaches, to achieve excellent performance is considered to be one of the important psychological features (Bull, et al. 2005; Gould, et al. 1987; Jones, 2002; Jones, et al., 2007).

For the last 40 years, mental toughness researchers and sports psychologists (Dennis, 1981; Goldberg, 1992; Loehr, 1982; 1986; 1995). Moreover, mental toughness is important in training champion players (Norris, 1999). Athletes with physical abilities have excellent athletes with mental toughness (Gucciardi, et al., 2008).

Luski, (1982) found that the four basic elements of successful performance and their; physical well-being, skill, experience, and mental toughness they mentioned that these elements worked together during performance.

Goldberg, (1992) athletes who do not have mental toughness are mentally weak during performance and that it will be uncontrolled. In another study, Cox (2012) found that elite athletes that is an important element in mental toughness.

Although the conceptual structure of mental toughness is still discussed in the literature, the literature on sports psychology work continues rapidly and various structures are revealed. (Jones, 2002) found that the structure of mental toughness with a qualitative approach appears in two ways.

The first is mental toughness in general, and competition, training, and so on.

Secondly, mental toughness. Special mental toughness means better focus on the opponent, trust, and self-control under pressure. As a psychological skill that is inherently possessed and developed in the direction stated.

In addition, according to (Jones, et al. 2007), mental toughness (goal setting, coping with stress, failure management). They have described. These;

1. Before the competition (e.g. goal setting)
2. During the competition (e.g. coping with stress and pressure)
3. After the competition (e.g. failure to manage).

The important question is mental toughness, mind structure (open-minded) or personality trait (genetic) or different mental toughness structures for different sports branches? (Crust, 2008).

However, there is an idea that mental toughness is composed of more than one component (Gucciardi & Gordon 2009; Sheard, et al., 2009).

The same time a great consensus on the features associated with mental toughness (Crust, 2008; Clough, et al., 2002)

In a quantitative study, four important things have progressed by defining mental toughness.

The studies on mental toughness mentioned above, scientific research has been carried out for the last 15 years to determine the conceptual framework (Clough, et al., 2002; Gould, et al., 2002; Gucciardi, et al., 2008; Jones, et al., 2007; Thelwell, et al., 2005). Because of these studies, although some conceptual definitions in the literature are supportive it sees. Jones et al. (2002) suggested that "mental toughness," in general, training and some other conditions, the athletes' mental requirements better accomplishments; specifically, focused more on his task than his opponents, safe and under pressure to keep them under control developed psychological power "(Jones, et al. 2007).

(Gould, et al. 2002) for their mental toughness in their work based on their views with the champions a definition with a wide range of concepts, such as perseverance, resilience and stubbornness (Gould et al., 2002). Clough et al. (2002) found that mental toughness, "the feeling of having an unwavering grudge without controlling their destiny" (Clough et al., 2002). At the same time, the individuals who hold this share they would remain relatively unaffected.

(Gucciardi, et al. 2008) Coaches with elite Australian coaching and athletic experience in the research they conducted, they defined mental toughness as "any obstacle, difficulty or oppression when it comes to perseverance, while things are going well in order to reach the targets consistently values, attitudes, behaviors, and it is a sum of emotions. "In addition, many researchers believe that mental toughness is a conceptual framework that includes other psychological characteristics that affect performance (Butt, et al., 2010).

Measuring mental toughness, evaluation and development of psychological performance (Durand-Bush & Salmela 2002). Mental toughness in the literature

The researchers see that mental toughness refer to the ability you have as an athlete to maintain performance limits regardless of the interference that

may affect your workouts; in addition to the confidence you have in your abilities to face goals that demand more from you, or competitive competitors.

In this sense, a confident athlete has more or less the following profile:

- Train to reach your goals and do your best to reach them.
- It handles adverse situations with integrity, that is, it exercises control of the context around it.
- He is an athlete with unshakable confidence. Believe in yourself as the only impeller to achieve your goals.
- It has an undisturbed concentration ability.
- Enjoy sports activity beyond frustrations in the face of possible adverse results
- Know your body better than any athlete.

Table 1. the age and Practice experience of the Group (Mean \pm SD)

Group	N	Age [years]	Practice experience [years]
Athletes	126	23 \pm 4.6	8.65 \pm 3.32

Table 1 shown the age and Practice experience of the subjects. There no significant differences were observed in the anthropometric characteristics for the subjects in the different groups.

Table 2. the age and Training experience of the Groups (Mean \pm SD)

Group	N	Age [years]	Training experience [years]
Track players	33	21 \pm 4.2	7 \pm 1.34
Field players	21	22 \pm 3.8	6 \pm 1.89

Table 2 shown the age and Training experience of the subjects. There no significant differences were observed in the age and Training experience for the subjects in the different events.

Instrument

Many tools have been developed by researchers to measure toughness. of them some of which specifically measure the mental toughness levels of only one branch-specific athlete tools. (Gucciardi & Gordon, 2009) consisted of 24 items and four sub-dimensions Mental toughness is one of the most important and necessary requirements in any sport activity. Without this, we can hardly talk about a successful athlete despite a good technique and physical preparation and rather we will do an average sportsman or suddenly good, but that will not go further or stand out. This point is definitely one of the fundamental to work on the psychological preparation of every athlete in general, but especially in the competitive and even more, the elite and in turn, is one of the most difficult to achieve.

It is one of the concepts currently used by all workers in the sports field. However, it is a psychological construct much more complex than could be imagined and is one of the most difficult points to achieve and consolidate for athletes. Mental

In this study, the aim is validity and reliability the Egyptian version of Sport Mental Toughness Questionnaire" (SMTQ-14) and evaluate the mental toughness between elite athletics (track and field).

Methods

126 athletes (female and male) from (soccer, basketball, volleyball, athletics, swimming) to validity and reliability of Sport Mental Toughness Questionnaire" (SMTQ-14)

The main sample contains Fifty-four athletics players from national team in Egypt participated in this study. (thirty-three players from track events (twenty-one male+ twelve female). twenty-one players from field events (fourteen male+ seven female).

toughness can allow an athlete with less physical abilities and abilities than his opponent to achieve victory.

They developed "Australian Football Mental Toughness Inventory" (AFMTI). The study included 418 male players playing in Australia as a sample group.

Another unique example developed is (Gucciardi & Gordon, 2009) developed 15 is the "Cricket Mental Toughness Inventory" (CMTI). Inventory of emotional intelligence, attention control, resilience, self-faith and desire to succeed consists. In order to determine the factor structure, the survey was conducted with 718 cricketers It was conducted. Some measurement tools developed in the field of writing, in general, all the other are tools that measure the mental toughness of athletes in individual and team sports.

The "Mental toughness Scale-48" (MTS-48) developed by (Clough, et al. 2002) measuring instruments. The most used in the literature to measure mental toughness MTS-48, one of the

measurement tools, consists of six sub-dimensions. These sub-dimensions are; yourself trust, struggle, commitment, emotional control, self-confidence and life's control. The "Mental toughness Scale" (MTS) (Madrigal, et al. 2013). While the scale was being developed, 271 athletes from different branches as a sample. MTS has 11 items and one factor (mental toughness) it consists. Another developed measurement tool is the "Mental toughness Inventory" (MTI) it was developed by (Middleton, et al. 2004). This work is done in different branches 479 athletes participated. Inventory self-efficacy, capacity, task similarity, duty focus, mental self-perception, perseverance, value, positivity, target commitment, stress reduction, personal best and positive. It consists of 12 sub-dimensions together with comparisons.

(Sheard et al. 2009) developed the "Sport Mental Toughness Questionnaire" (SMTQ-14).

Results.

- **Test-Retest Reliability**

Table 2. Mean ± SD, and "R" sign between Test-Retest Reliability in SMTQ

Variables	Test		Retest		R
	M	SD	M	SD	
Confidence	16.66	3.18	16.34	2.56	0.76
Constancy	13.85	2.54	13.68	2.87	0.81
Control	11.74	2.89	11.73	2.21	0.87
Total SMTQ- 14	14.08	1.87	13.92	2.12	0.81

Significant differences, $p < 0.05$

The test-retest reliability for the Sport Mental Toughness Inventory SMTQ-14 was 0.81

- **Discriminant validity**

Table 2. Mean ± SD, and "T" sign between Upper quartile and lower quartile in SMTQ

Variables	Upper quartile		lower quartile		T sign
	M	SD	M	SD	
Confidence	17.78	2.13	14.53	2.32	Sign
Constancy	15.85	2.43	11.82	2.57	Sign
Control	13.74	2.56	10.65	2.68	Sign
Total SMTQ- 14	14.08	1.87	13.92	2.12	Sign

Significant differences, $p < 0.05$

A paired sample t-test revealed that these means were significantly different ($t = 4.54, p = < .05$) in all three subscales; confidence, constancy and control.

- **Difference between track and field players**

Table 2. Mean ± SD, and "T" sign between Track events players and Field events players in SMTQ

Variables	Track events		Field events		T sign
	M	SD	M	SD	
Confidence	18.64	3.14	15.32	2.53	Sign
Constancy	16.85	2.52	13.77	2.36	Sign
Control	14.52	2.76	13.89	2.92	No Sign
Total SMTQ- 14	16.67	2.81	14.33	2.60	Sign

Significant differences, $p < 0.05$

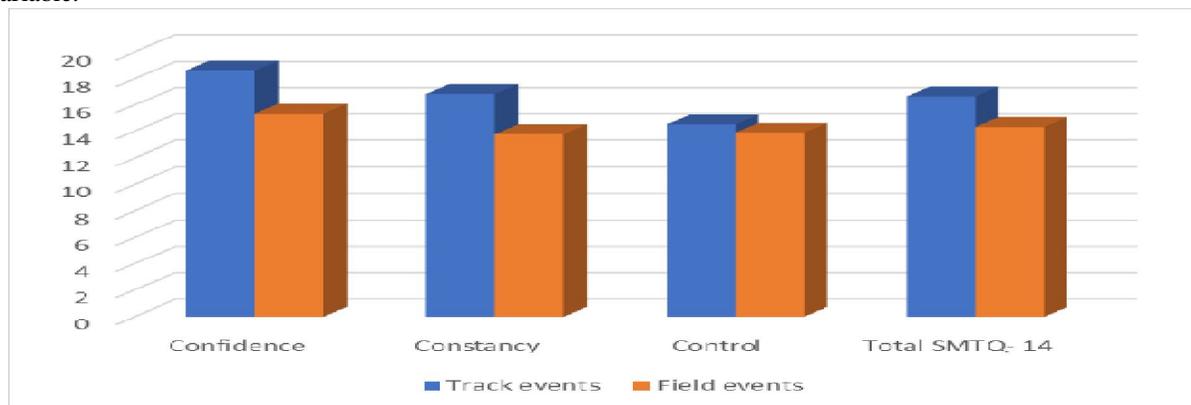
Inventory 14 material, and "trust, continuity, control". SMTQ-14 was applied to 633 athletes from different sports branches during the development phase.

Sport Mental Toughness Inventory SMTQ-14: sport mental toughness questionnaire (SMTQ; Sheard et al., 2009) is 14-item that consists of three subscales; confidence, constancy and control. These subscales can be combined to contain a global measure of mental toughness. 4-point Likert scale anchored at 1 (not at all true) to 4 (very true). (Sheard et al., 2009).

Statistical analysis

Statistical Package of Social Sciences (SPSS) version 22 was used in this study. Means, standard deviations, Student's t-test for independent samples was used to determine the differences in parameters between the two groups. The $p < 0.05$ was considered as statistically significant.

An independent sample t-test revealed that these means were significantly different ($p < .05$) in subscales; confidence, constancy and Total SMTQ- 14 for track event players. No significantly different ($p > .05$) in control variable.



Discussion

The purpose of the present series of studies was to develop and validate a measure of Sport Mental Toughness Inventory SMTQ-14 in Egyptian environment. Study one found good support for the structural validity and test retest reliability of the Sport Mental Toughness Inventory SMTQ-14, while Study two found significantly different ($p < .05$) in subscales; confidence, constancy and Total SMTQ-14. No significantly different ($p > .05$) in control variable

Further support for (Gucciardi & Gordon, 2009) proposal that mental toughness via observer rather than self-report ratings.

Sport achievement requirement high level mental toughness (M Sheard, et al. 2009), challenging (Kaiseler, et al., 2009) and the ability to findings related to high pain tolerance (Crust, 2008; Negrea et al., 2010).

Mentally tough athletes are highly competitive, committed, self-motivated, able to maintain concentration in stressful situations, resistance to increasingly difficult situations that can effectively cope with individuals who are able to maintain a high level of confidence in themselves even after failures (Cox, 2012).

Mental toughness begins with the difficulties encountered by the athletics players during their performances motivation, concentration, self-confidence, emotion and a mindset that allows them to control their thinking and ability.

Measuring the mental toughness of the Egyptian athletes adapted to Egyptian environment and helping coaches, sports psychologists and interested in assessment.

Team social support provided by athletes to their team mates in their sports while in individual

games as athletics have to provide it by themselves (Madrigal, et al. 2013).

Some psychological features, especially which reflect mental toughness, such as poor self-confidence, frustration and anxiety, contribute significantly to sports achievement.

The player when own self-confident have learned goals that seek to achieve them with high motivation, and is able to deal with negative energy and neutralize it. It will not be able to get rid of it completely and is able to turn it into a positive energy during competitions. The psychological energy of the player changes and changes during sports competitions or competitions. Either to the players individually or to the sports team as a group, and this is due to several reasons that lead to the performance of the performance of the player or competitor, or to feel tired physical or mental, or to the different method of dealing between the players and the coach and the public's reaction is to encourage or blame, or to fear the occurrence or recurrence of the injury, so the athlete must be aware of them and aware of them as well as for the player.

In this regard, (Gucciardi & Gordon, 2009) maintains that individual differences have a significant impact on the different reactions of each player, so the trainer must recognize similar situations that make the athlete move from the state of mental energy mobilization to the negative energy or Positive energy.

He adds that the incidence of sports injuries depends largely on the balance between negative energy and positive energy.

This is confirmed by (Mohamed, 1996) that the occurrence of mathematical achievements is related to the player's presence in the optimal mental energy area and found that the most important



characteristic is that attention has been directed entirely to skill performance.

(Mohamed 1997) argues that concern can be seen as one of the psychological factors associated with both mental and physical injuries. A high-anxiety athlete who affects his state of anxiety before sports competition and associated physiological excitability can narrow the focus of the player's attention so that he cannot see the signal of the risk.

(Durand-Bush & Salmela, 2002). points out that attention is a skill that can be learned and developed through training and continuous effort, as the fate of the game is often determined by small errors that can often be attributed to loss of concentration of attention.

The researchers believe that the motivation to stimulate the player and stimulate the performance of vigor, which may result in a lack of awareness and focus and rush towards the opponent.

Conclusions

Under the conditions of our study, mental toughness differ according the event type. These results have to be taken into account by instructors in order to better understand and implicated of these concepts for technical effects of training.

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