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Assessment of aspects of mental toughness in elite female track and field athletes

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Abstract

The present study aimed to assess the aspects of mental toughness in elite female track and field athletes. For the present study, 40 elite female track and field athletes (Average age 23.22 years) were selected as a sample. Similarly, 40 sub-elite female track and field athletes (Average age 22.62 years) were also selected as samples. The selection of elite female track and field athletes was done from only those who took part in national level tournaments and who came in first four positions in these events. The criterion for the selection of sub-elite female track and field athletes was set to participation in district-level events. To assess the mental toughness of selected female track and field athletes, the Mental Toughness Questionnaire prepared by Tiwari (2007) was used. It was concluded that elite female track and field athletes are superior in aspects of mental toughness namely self-confidence, motivation, attention control, goal setting, visual and imagery control, and attitude control as compared to sub-elite female track and field athletes.

Keywords: Mental toughness, track and field, elite, sub-elite, female athletes

Introduction

Many people use the term mental toughness generously to certain positive attributes or characteristics that help us to cope with complicated situations. In this way, it is an extremely controversial term. In the sporting arena, television and radio commentators, coaches, and sports psychologists use mental terms for those athletes who keep trying in all circumstances to achieve their goals. Hence, in sporting terms, it describes the mental state of a sports person. Fourie and Potgieter (2001) [4] definition of mental toughness comprises motivation level, coping skills, confidence maintenance, cognitive skill, discipline and goal-directedness, competitiveness, possession of prerequisite physical and mental requirements, team unity, preparation skills, psychological hardiness, and ethics. According to White (2001) [16], a set of personal characteristics that is used to guard against life pressure constitutes mental toughness. Jones (2002) [6] defined mental toughness as a developed mental edge that enables an athlete to maintain focus, confidence, determination, and control consistently. Jones, Hanton, and Connaughton (2002) [7] defined mental toughness as "having the natural or developed psychological edge that enables an athlete generally, to cope better than your opponents with the many demands (competition, training, lifestyle) that sport places on a performer; specifically, be more consistent and better than the opponents in remaining determined, focused, confident, and in control under pressure." Clough *et al.* (2002) [2] defined mental toughness from the perspective of self-confidence and self-belief. He opined that being mentally strong or tough means that a person possesses superior self-confidence and self-belief in his/her abilities. This confidence and self-belief make him/her choose and set goals that are realistic and pursue those goals without being affected by adverse conditions.

Modern sports give special preference to the psychological aspect of sports performance because it has been scientifically documented that without sound psychological preparation, a sports person cannot attain success at the highest level. It is believed and proven scientifically that peak performance in sports depends largely on physical and psychological factors. But at the highest level, the physical fitness and other allied factors of sports persons are more or less the same, this is where psychological factors play a major role as far as success is concerned.

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One of the psychological variables i.e. mental toughness has been considered most valuable as far as sports performance is concerned by sports psychologists. However, the results are somewhat inconsistent not only in terms of the effect of aspects of mental toughness on sports performance but its theoretical framework. Given these contradictory findings and the variability of definitions and framework of mental toughness, the researcher decided to extensively compare aspects of the mental toughness of elite and sub-elite female track and field athletes.

Review of literature

Under the domain of sports psychology, several studies have been conducted to find the differences in the psychological characteristics of elite and sub-elite players. Studies are also available on mental toughness. Some of the notable studies in this regard are conducted by Golby (2004)^[5], Kuan and Roy (2007)^[8], Bois *et al.* (2009)^[1], Sotoodeh *et al.* (2012)^[14], Mohammadzadeh and Sami (2014)^[11], Cowden (2016)^[3] and Shrigiriwar (2019)^[13] but so far aspects of mental toughness in female track and field athletes have not been assessed.

Hypothesis

Aspects of mental toughness namely self-confidence, motivation, attention control, goal setting, visual and imagery control, and attitude control will be significantly high in elite female track and field athletes as compared to sub-elite track and field athletes.

Methodology

The following methodological steps were taken to conduct the present study.

Sample

For the present study, 40 elite female track and field athletes (Average age 23.22 years) were selected as a sample. Similarly, 40 sub-elite female track and field athletes (Average age 22.62 years) were also selected as samples for the present study. The selection of elite female track and field athletes was done from only those who took part in national level tournaments and who came in first four positions in these events. The criterion for the selection of sub-elite female track and field athletes was set to participation in district-level events.

Tools

To assess the mental toughness of selected female track and field athletes, the Mental Toughness Questionnaire prepared by Tiwari (2007)^[17] was used. It consists of 48 items that measure aspects namely self-confidence, motivation, attention control, goal setting, visual and imagery control, and attitude control. A minimum score of 48 and a maximum score of 240 can be obtained in this questionnaire. The higher the score, the better the aspects of mental toughness in the direction of the study. This test is highly reliable and valid.

Procedure

40 elite male track and field athletes and 40 sub-elite male track and field athletes were selected. Mental Toughness Questionnaire prepared by Tiwari (2007)^[17] was administered and responses were scored off. After tabulation in an Excel sheet, a suitable statistical formula was used. The result is given in table 1.

Result and Discussion

Table 1: Comparison of Aspects of Mental Toughness between Elite and Sub-elite Female Track and Field Athletes

Aspects of Mental Toughness	Track and Field Female Athletes				Mean Difference	'T'
	Elite (N=40)		Sub-elite (N=40)			
	Mean	S.D.	Mean	S.D.		
Self Confidence	37.72	2.47	33.20	7.77	4.52	3.50, $p < .01$
Motivation	41.97	5.37	36.70	9.62	5.27	3.02, $p < .01$
Attention Control	37.92	8.89	35.62	11.00	2.30	1.02, $p < .05$
Goal Setting	29.47	7.04	28.10	8.32	1.37	0.79, $p > .05$
Visual and Imagery Control	25.70	3.74	23.42	5.91	2.27	2.05, $p < .05$
Attitude Control	25.40	3.87	23.27	5.99	2.12	1.88, $p > .05$

A perusal of the statistical calculations shown in Table 1 reveals the following facts

- Self-confidence of elite female track and field athletes ($M=37.72$) was found to be significantly higher as compared to sub-elite female track and field athletes ($M=33.20$). The calculated $t=3.50$ is statistically significant at the .01 level.
- Elite female track and field athletes' motivation level was found to be significantly higher ($M=41.97$) as compared to sub-elite female track and field athletes ($M=36.70$). The calculated $t=3.02$ is statistically significant at the .01 level.
- Attention control characteristics in elite female track and field athletes ($M=37.92$) and sub-elite female track and field athletes ($M=35.62$) were not found to differ significantly from each other. [$t=1.02, p > .05$]
- Statistically non-significant difference was observed in goal setting aspect of mental toughness between elite and sub-elite female track and field athletes. [$t=0.79, p > .05$]
- Visual and imagery control of elite female track and field

athletes ($M=25.70$) was found to be significantly higher as compared to sub-elite female track and field athletes ($M=23.42$). The calculated $t=2.05$ is statistically significant at the .05 level.

- Statistically non-significant difference was observed attitude control aspect of mental toughness between elite and sub-elite female track and field athletes. [$t=1.88, p > .05$]

Researchers in the past have also shown that elite athletes had that extra bit of mental edge in terms of focus, confidence, determination, and control (Jones, 2002)^[6]. Researchers have also linked factors such as commitment, self-belief, coping ability of athletes under pressure, and desire for competition as major facilitators for performance at the highest level (Macnamara, Button, & Collins, 2010)^[10]. All the above qualities are also incorporated in the 4C model of mental toughness proposed by Clough *et al.* (2002)^[2]. Waples (2003)^[15] also reported that elite gymnasts excelled in coping with adversity, goal setting, mental preparation, concentration,

confidence, and achievement motivation as compared to non-elite gymnasts. Moradi *et al.* (2013) ^[12] reported that the acquisition and retention of sports skills are associated with the mental toughness of a sportsperson. Levy *et al.* (2012) ^[9] reported that mentally tough athletes are more likely to efficiently cope with stressful situations as compared to athletes with inferior mental toughness. Hence the results are not surprising.

Conclusion

Based on the results it may be concluded that elite female track and field athletes are superior in aspects of mental toughness namely self-confidence, motivation, attention control, goal setting, visual and imagery control, and attitude control as compared to sub-elite female track and field athletes.

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