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Comparison of mental toughness between international sprinters and long distance athletes

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Abstract

The objective of the study was to know and compare the difference between sprinters and long distance athletes on overall mental toughness and its different sub-variables. The subjects for this study were the sprinters and long distance athletes of India, who represented India in 2018 Asian Games and 2019 Asian Track and Field Athletic Championship. Total number of the subjects were N=45 (28 sprinters and 17 long distance athletes). Age of the subjects ranges from 18 to 28 with the mean age, sprinters 23.57 and long distance athletes 24.41. Data was collected during the coaching camp of above mentioned competitions from different training centers of India (Patiala, Bangalore and Otty). The variable selected for the study was Mental Toughness. This questionnaire measures various aspects of mental toughness such as Reboundability, ability to handle pressure, concentration ability, level of confidence, and motivation. The tools used for the study was Mental Toughness Questionnaire developed by Alan Goldberg (2004), and Demographic Information Questionnaire. The first section was demographic information sheet consisting of several questions used to describe the sample's age, gender, event, training age, hours of training per day, years of International participation and time spent for sports related activities (such as reading, watching videos in your sport etc.). The data was collected by administering the questionnaire personally. Descriptive statistics was used to describe the basic features of the data and to compare between the groups; independent 't' test was used. The results indicated that there is no significant difference between sprinters and long distance athletes on overall mental toughness and its different sub variables. But it revealed that overall mental toughness is low for both group of athletes.

Keywords: Mental toughness, sprinters, long distance athletes, international, performance

Introduction

World of Sports is magical, an athlete who performs well in major competitions are known to everyone and become heroes. But winning a medal in higher level competitions is not easy. Sportive success is an interaction with physical, physiological and psychological performance. Sport psychology is an interdisciplinary science that includes knowledge from biomechanics, physiology, kinesiology and psychology. The psychological factors involved in athletic performance have long been of interest to athletes, coaches, sport psychologists, sports scientists etc. Each psychological variable has its unique contribution towards sports performance but we have to identify and determine the psychological attributes which affects the performance. There are many psychological factors associated with successful performance in competition. A factor often associated is mental skill. Mental toughness can be considered as a mental skill factor. Mental toughness is the ability to perform at the upper range of one's ability regardless of the circumstances, and is one of the most important characteristics that an athlete can possess (Loehr, 1986). Gucciardi *et al.*, (2008) [5] says that mental toughness can explain how physically talented athletes become great athletes. The ability to be mentally tough differs from individual to individual. It also defers according to the situation and from one sport to another. According to Clough *et al.* (2002) [3] mentally tough individual has a high sense of self-belief and an unshakeable faith that they control their own destiny. They approach competition with controlled emotions and a positive attitude. Jones, Hanton and Connaughton, (2002) [8] conducted a qualitative study of elite athletes, aiming to define mental toughness and to determine the essential attributes required to be a mentally tough performer. The definition that emerged from their analysis concluded that:

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Mental toughness is having the natural or developed psychological edge that enables you to: 1) Generally, cope better than your opponents with the many demands (competition, training, lifestyle) that sport places on a performer; and, 2) Specifically, be more consistent and better than your opponents in remaining determined, focused, confident, and in control under pressure. Mental toughness separates two athletes with the same skill and physical preparation. The physical ability of elite athletes are almost same, the only difference is in the mental skill. The athlete who is more mentally tough will emerged as winners. Mental toughness helps athletes that they are more focused and more determined than their opponent under pressure and difficult circumstances and also they will show more self-confidence and control (Jones, 1995) [7]. From the available literature it is evident that mental toughness affects the athlete’s performance in competition.

Athletic events, except relays are individual contests with athletes challenging each other to decide a single victor. Depending on the particular event, many different factors, such as talent, training, trainability, physical factors, body composition, nutritional status, technique, tactical awareness, motivation and other psychological characteristics have been shown to contribute to sport success (Maughan, 2009) [11]. Sprint events are glamour items in the track and field competitions and lasts only for few seconds. Endurance performance is physically and mentally tough; as it is time consuming and performs under the condition of fatigue. The best athletes can push themselves to sustain physical fatigue and remain psychologically positive over long distances and durations. To successfully complete sprint or endurance events, athletes must be willing to meet the physical challenges of the sport. This includes many hours of training, even through the cold, wet and winter months. However, according to my knowledge, there is no much comprehensive and systematic researches have been conducted so far regarding the mental toughness of Indian athletes. Therefore,

present study was conducted to determine the significant difference between sprinters and long distance athletes with regards to Mental Toughness.

Methodology

The subjects for this study were the sprinters and long distance athletes of India, who represented India in 2018 Asian Games and 2019 Asian Track and Field Athletic Championship. Total number of the subjects were N=45 (28 sprinters and 17 long distance athletes). Age of the subjects ranges from 18 to 28 with the mean age, sprinters 23.57 and long distance athletes 24.41. Data was collected during the coaching camp of above mentioned competitions from different training centers of India (Patiala, Banglore and Otty). The variable selected for the study was Mental Toughness; this questionnaire measures various aspects of mental toughness such as Reboundability, ability to handle pressure, concentration ability, level of confidence and motivation. The tools used for the study was Mental Toughness Questionnaire developed by Alan Goldberg, (2004) and Demographic Information Questionnaire. The first section was demographic information sheet consisting of several questions used to describe the sample’s age, gender, event, training age, hours of training per day, years of International participation and time spent for sports related activities (such as reading, watching videos in your sport etc.). In Mental Toughness Questionnaire, a score of 26-30 indicates strength in overall mental toughness. Scores of 23-25 indicates average to moderate skill in mental toughness. Scores of 22 or below means that low skill in mental toughness, you need to start putting more time into the mental training area. The data was collected by administering the questionnaire personally. Descriptive statistics was used to describe the basic features of the data and to compare between the groups; independent ‘t’ test was used.

Results and Findings

Table 1: Average of demographic information

Group	N	Age	Training Age	Hours of Training per day	Time spent for sports related activities
Sprinters	28	23.57	8.535	5.571	7.5
Long Distance Athletes	17	24.41	7.235	5.411	4.11

Table 1 is self-explanatory where the number of athletes belongs to sprinters group and long distance athletes group, their mean age, training age, hours of training per day and time spent for sports related activities, have been presented. The number of athletes of sprinters and long distance athletes

are 28 and 17, their mean age was 23.57 and 24.41, training age was 8.53 and 7.23, hours of training per day was 5.57 and 5.41 and time spent for sports related activities were 7.5 and 4.11 respectively.

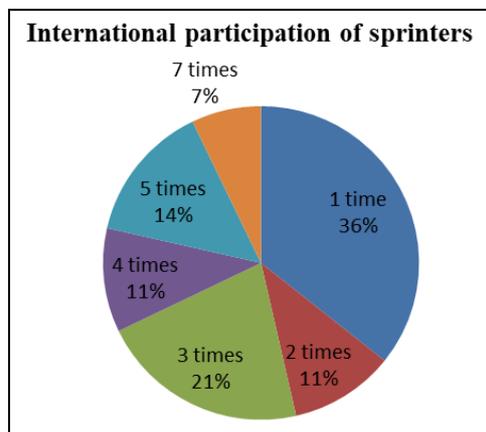


Fig 1: Percentage analysis of International participation of sprinters

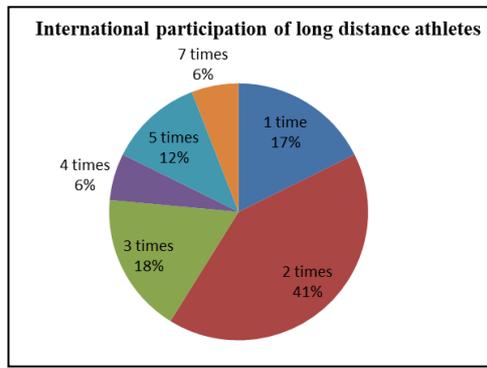


Fig 2: Percentage analysis of International participation of long distance athletes

Table 2: Descriptive statistics of the mental toughness of sprinters and long distance athletes

Variables	Group	N	Mean	Std. Deviation	Std. Error Mean
Reboundability	Sprinters	28	3.250	1.554	.29378
	Long Distance	17	2.823	1.629	.39515
Ability To Handle Pressure	Sprinters	28	3.535	1.752	.33127
	Long Distance	17	3.470	1.736	.42111
Concentration	Sprinters	28	3.857	1.458	.27562
	Long Distance	17	3.588	1.003	.24343
Confidence	Sprinters	28	4.428	1.317	.24896
	Long Distance	17	4.294	1.212	.29412
Motivation	Sprinters	28	5.250	.927	.17537
	Long Distance	17	4.7059	1.04670	.25386
Overall Mental Toughness	Sprinters	28	20.2500	5.14692	.97268
	Long Distance	17	18.8824	4.06021	.98475

The mean and SD of overall mental toughness of sprinters and long distance athletes are 20.25 ±5.14 and 18.88 ±4.06 respectively. The present score indicates clearly the low level of mental toughness in both group of athletes, as score below 22 is considered as low level of mental toughness as per the author’s norms.

For the sub factor reboundability, the sprinters had shown the mean and SD, 3.25±1.55 and long distance athletes shown 2.82±1.62. The mean and SD of ability to handle pressure for

sprinters and long distance athletes are 3.53±1.75 and 3.47±1.73 respectively. For the sub factor concentration, the sprinters had shown the mean and SD, 3.85±1.45 and long distance athletes shown 3.58±1.00. The mean and SD of confidence for sprinters and long distance athletes are 4.42±1.31 and 4.29±1.21 respectively. Finally for the sub factor motivation, the sprinters had shown the mean and SD, 5.25±.92 and long distance athletes shown 4.70±1.04.

Table 3: Comparison of mental toughness between sprinters and long distance athletes

Variables	Group	Mean	SD	MD	SE	t	Sig
Reboundability	Sprinters	3.25	1.554	.426	.486	.876	.386ns
	Long Distance Athletes	2.82	1.629				
Ability to handle pressure	Sprinters	3.535	1.752	.065	.537	.121	.904ns
	Long Distance Athletes	3.470	1.736				
Concentration	Sprinters	3.857	1.458	.268	.402	.669	.507ns
	Long Distance Athletes	3.588	1.003				
Confidence	Sprinters	4.428	1.317	.134	.393	.342	.734ns
	Long Distance Athletes	4.294	1.212				
Motivation	Sprinters	5.250	.927	.544	.299	1.817	0.076ns
	Long Distance Athletes	4.705	1.046				
Overall Mental Toughness	Sprinters	20.250	5.146	1.367	1.467	.932	.356ns
	Long Distance Athletes	18.882	1.060				

t (43,0.05) = 2.016, ns= not significant at 0.05 level of significance.

The above table shows that there is no significant difference in reboundability, ability to handle pressure, concentration, confidence and motivation between sprinters and long distance athletes. The calculated ‘t’ value of overall mental toughness is 0.932 s lower than the table value of 2.016 with the df 43 and level of significance is 0.05. In the same way the calculated ‘t’ value for reboundability is 0.876, ability to handle pressure is 0.121, concentration is 0.669, confidence is 0.342, motivation is 1.817 are lower than the table value of

2.016 with the df 43 and level of significance is 0.05.

Discussion on Findings

After applying Independent ‘t’ statistics in the present study, it was revealed that there is no significant difference in overall mental toughness between sprinters and long distance athletes as the obtained ‘t’ value 0.932 is significantly lower than the tabulated ‘t’ value 2.016 with the df 43 and at the 0.05 level of significance. The mean and SD of overall mental toughness of

sprinters and long distance athletes are 20.25 ± 5.14 and 18.88 ± 4.06 respectively. The present score indicates clearly the low level of mental toughness in both group of athletes, as score below 22 is considered as low level of mental toughness as per the author's norms. Even though Mental Toughness did not indicate any statistically significant differences between the two groups, sprinters scored consistently higher than long distance runners for the five sub scales and overall mental toughness score, which are in contrast to the findings of Haileyesus G and R.C Reddy, (2016) ^[4] that long distance runners have significantly greater strength in the psychological skills than short distance runners.

Conclusion

The objective of this study was to know and compare the differences between sprinters and long distance athletes on overall mental toughness and its different sub-variables. The results indicated that there is no significant difference between sprinters and long distance athletes on overall mental toughness and its different sub variables i.e. reboundability, ability to handle pressure, concentration, confidence and motivation. But the present score of overall mental toughness indicates clearly the low level of mental toughness in both group of athletes, as score below 22 is considered as low level of mental toughness as per the author's norms. Mental skills are not a genetic gift; it can be learned or taught. The investigator found support for the use of mental training, (Driskell, Cooper and Moran, 1994, Weinberg and Comar, 1994, and Behncke, 2014). However, mental training must be practiced systematically over time to gain enhancement of performance in a wide variety of sports. Mohamed Mostafa, (2015) found improvement in performance level in swimming after giving three month training in mental toughness. Visram A, (2014) has suggested that mental toughness intervention is effective at increasing mental toughness in women's soccer and field hockey athletes. To play at this level, the athletes probably already have many of these skills. Only thing is find out what is lacking and strengthen it through systematic training. The findings of the present study, hope fully, could help track and field coaches and sport psychologists to design more effective training plans, incorporating psychological skills that need to be enhanced. This also can provide insight into training and performance mindset at junior levels.

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