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Mental Toughness in Sport: Critical Reflections and Future Considerations

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Abstract

The present study was aimed to identify the role of Mental Toughness among open and closed skill athletes. In order to achieve the objective of the study, one hundred and twenty (N=120) male university level athletes of 19 to 25 years were selected to act as subject. A prior consent was sought from all the subjects after being informed about the objective and protocol of a study. The subjects were segregated into two groups of sixty (n=60) open skill athletes and sixty (n=60) closed skill athletes of various games and sports. To measure the level of Mental Toughness of the subjects, the Mental Toughness battery constructed by Goldberg (1998) was administered. One way Analysis of Variance (ANOVA) was employed to compare various sports groups i.e. open and closed skill athletes. Where 'F' values were found significant, LSD (Least Significant Difference) Post-hoc test was applied to find out the direction and degree of differences. For testing the hypotheses, the level of significance was set at 0.05. Insignificant differences were noticed among open and closed skill athletes on the sub-variables; reboundability, ability to handle pressure, concentration, confidence, motivation and over all mental toughness.

Keywords: Mental Toughness, Open and Closed Skill, Athletes

Introduction

The psychological factors are always on a high priority to be a successful athlete with stupendous performance. The major area of focus for such an athlete is mental toughness which works to gain momentum in performance. It is one of the major components of personality. Sports psychologist, coaches and sports commentators acknowledge the mental toughness in sporting performance (Bull et al., 2005). In order to create champion, a high quality of mental toughness is required which calls for psychological attributes (Goldberg, 1998; Hodge, 1994; Tunney, 1987; Williams, 1988). Levy et al. (2006) found that mental toughness was found associated with a more positive threat appraisal. It is like better ability to cope with pain and in the case of injured athletes, greater attendance to clinic rehabilitation. Nicholls et al. (2008a, b) reported that higher level of mental toughness was correlated with optimism but negatively correlated with pessimism. It will not be out of place to point out both age and sporting experience, finally playing its role in mental toughness. Gould et al. (1987) reported that 82 per cent of wrestling coaches ranked mental toughness as the primary quality related to competitive success. Williams (1998) averred that the final outcome of a sporting event is the final outcome of mental toughness. The investigators had focussed to ascertain the major role of mental toughness among open and closed skill athletes' performance.

Materials and Methods

Participants

For this purpose, one hundred and twenty (N=120) male university level athletes of 19 to 25 years of age were selected to act as subjects. All the subjects, after having been informed about the objective and protocol of the study, gave their consent and volunteered to participate in this study. They were divided into two groups; sixty (n=60) open skill athletes and sixty (n=60) closed skill athletes of various games and sports.

Procedures

To measure the level of Mental Toughness of the subjects, the Mental Toughness battery constructed by Goldberg (1998) was administered.

Statistical analysis

One way Analysis of Variance (ANOVA) was employed to compare various sports groups i.e. open and closed skill athletes. Where 'F' values were found significant, LSD (Least Significant Difference) Post-hoc test was applied to find out the direction and degree of differences. For testing the hypotheses, the level of significance was set at 0.05.

Results

Table 1. Analysis of Variance (ANOVA) results with regard to mental toughness among open skill athletes (basketball, handball and football) on the sub-variable reboundability

Source of variance	Sum of Squares	df	Mean Square	F-ratio	Sig.
Between Groups	1.233	2	.617	.485	.618
Within Groups	72.500	57	1.272		
Total	73.733	59			

F 0.05 (2, 57)

It is evident from table 1 that results of Analysis of Variance (ANOVA) among various sport groups (basketball, handball and football) with regard to open skill athletes on the sub-variable reboundability were found statistically insignificant (P>0.05). Since 'F' ratio was not found statistically significant, therefore, post hoc test has not been applied.

Table 2. Analysis of Variance (ANOVA) results with regard to mental toughness among open skill athletes (basketball, handball and football) on the sub-variable ability to handle pressure

Source of variance	Sum of Squares	df	Mean Square	F-ratio	Sig.
Between Groups	.100	2	.050	.050	.952
Within Groups	57.500	57	1.009		
Total	57.600	59			

F 0.05 (2, 57)

It can be seen from table 2 that results of Analysis of Variance (ANOVA) among various sport groups (basketball, handball and football) with regard to open skill athletes on the sub-variable ability to handle pressure were found statistically insignificant (P>0.05).

Table 3. Analysis of Variance (ANOVA) results with regard to mental toughness among open skill athletes (basketball, handball and football) on the sub-variable concentration

Source of variance	Sum of Squares	df	Mean Square	F-ratio	Sig.
Between Groups	2.633	2	1.317	1.032	.363
Within Groups	72.700	57	1.275		
Total	75.333	59			

F 0.05 (2, 57)

It can be observed from table 3 that results of Analysis of Variance (ANOVA) among various sport groups (basketball, handball and football) with regard to open skill athletes on the sub-variable concentration were found statistically insignificant (P>0.05).

Table 4. Analysis of Variance (ANOVA) results with regard to mental toughness among open skill athletes (basketball, handball and football) on the sub-variable confidence

Source of variance	Sum of Squares	df	Mean Square	F-ratio	Sig.
Between Groups	1.900	2	.950	.985	.380
Within Groups	54.950	57	.964		
Total	56.850	59			

F 0.05 (2, 57)

The results of Analysis of Variance (ANOVA) in table 4 among various sport groups (basketball, handball and football) with regard to open skill athletes on the sub-variable confidence were found statistically insignificant (P>0.05).

Table 5. Analysis of Variance (ANOVA) results with regard to mental toughness among open skill athletes (basketball, handball and football) on the sub-variable motivation

Source of variance	Sum of Squares	df	Mean Square	F-ratio	Sig.
Between Groups	4.133	2	2.067	1.874	.163
Within Groups	62.850	57	1.103		
Total	66.983	59			

F 0.05 (2, 57)

It can be judged from table 5 that results of Analysis of Variance (ANOVA) among various sport groups (basketball, handball and football) with regard to open skill athletes on the sub-variable motivation were found statistically insignificant (P>0.05).

Table 6. Analysis of Variance (ANOVA) results with regard to open skill athletes among various sport groups (basketball, handball and football) on the variable overall mental toughness

Source of variance	Sum of Squares	df	Mean Square	F-ratio	Sig.
Between Groups	2.433	2	1.217	.306	.737
Within Groups	226.300	57	3.970		
Total	228.733	59			

F 0.05 (2, 57)

It can be ascertained from table 6 that results of Analysis of Variance (ANOVA) among various sport groups (basketball, handball and football) with regard to open skill athletes on the variable overall mental toughness of open skill athletes were found statistically insignificant (P>0.05).

Table 7. Analysis of Variance (ANOVA) results with regard to mental toughness among closed skill athletes (archery, swimming and gymnastics) on the sub-variable reboundability

Source of variance	Sum of Squares	df	Mean Square	F-ratio	Sig.
Between Groups	.433	2	.217	.186	.831
Within Groups	66.550	57	1.168		
Total	66.983	59			

F 0.05 (2, 57)

It can be seen from table 7 that results of Analysis of Variance (ANOVA) among various sport groups (archery, swimming and gymnastics) with regard to closed skill athletes on the sub-variable reboundability were found statistically insignificant (P>0.05).

Table 8. Analysis of Variance (ANOVA results with regard to mental toughness among closed skill athletes (archery, swimming and gymnastics) on the sub-variable ability to handle pressure

Source of variance	Sum of Squares	df	Mean Square	F-ratio	Sig.
Between Groups	1.200	2	.600	.662	.520
Within Groups	51.650	57	.906		
Total	52.850	59			

F 0.05 (2, 57)

It is evident from table 8 that results of Analysis of Variance (ANOVA) among various sport groups (archery, swimming and gymnastics) with regard to closed skill athletes on the sub-variable ability to handle pressure were found statistically insignificant (P>0.05).

Table 9. Analysis of Variance (ANOVA) results with regard to mental toughness among closed skill athletes (archery, swimming and gymnastics) on the sub-variable concentration

Source of variance	Sum of Squares	df	Mean Square	F-ratio	Sig.
Between Groups	.300	2	.150	.117	.890
Within Groups	73.350	57	1.287		
Total	73.650	59			

F 0.05 (2, 57)

It has been observed from table 9 that results of Analysis of Variance (ANOVA) among various sport groups (archery, swimming and gymnastics) with regard to closed skill athletes on the sub-variable concentration were found statistically insignificant (P>0.05).

Table 10. Analysis of Variance (ANOVA) results with regard to mental toughness among closed skill athletes (archery, swimming and gymnastics) on the sub-variable confidence

Source of variance	Sum of Squares	df	Mean Square	F-ratio	Sig.
Between Groups	.233	2	.117	.113	.893
Within Groups	58.750	57	1.031		
Total	58.983	59			

F 0.05 (2, 57)

It can be noticed from table 10 that results of Analysis of Variance (ANOVA) among various sport groups (archery, swimming and gymnastics) with regard to closed skill athletes on the sub-variable confidence were found statistically insignificant (P>0.05).

Table 11. Analysis of Variance (ANOVA) results with regard to mental toughness among closed skill athletes (archery, swimming and gymnastics) on the sub-variable motivation

Source of variance	Sum of Squares	df	Mean Square	F-ratio	Sig.
Between Groups	2.633	2	1.317	1.304	.279
Within Groups	57.550	57	1.010		
Total	60.183	59			

F 0.05 (2, 57)

It is evident from table 11 that results of Analysis of Variance (ANOVA) among various sport groups (archery, swimming and gymnastics) with regard to closed skill athletes on the sub-variable motivation were found statistically insignificant (P>0.05).

Table 12. Analysis of Variance (ANOVA) results with regard to closed skill athletes among (archery, swimming and gymnastics) on the variable overall mental toughness

Source of variance	Sum of Squares	df	Mean Square	F-ratio	Sig.
Between Groups	15.833	2	7.917	1.521	.227
Within Groups	296.750	57	5.206		
Total	312.583	59			

F 0.05 (2, 57)

It can be judged from table 12 that results of Analysis of Variance (ANOVA) among various sport groups (archery, swimming and gymnastics) with regard to closed skill athletes on the variable overall mental toughness of closed skill athletes were found statistically insignificant (P>0.05).

Discussion and Conclusion

A thorough cogitation of all the twelve variance tables with special references to mental toughness among open (basketball, handball and football) and closed (archery, swimming and gymnastics) skill athletes clearly indicated that there were insignificant differences found among various groups. It can be safely surmised that the open and closed skill athletes were equally developed on bouncing back from setbacks and mistakes, ability to stay calm in the clutch, ability to focus and unshaken by setbacks and failures, motivational drive, successful completion, ability to accomplish the goals and on over all mental toughness. Similar trends have been reported by Rathore et al. (2009) wherein they found that the team game players were more mentally tough as compared to individual game players on the variable mental toughness. Mohammad et al. (2009) elucidated that Malaysian professional football players had significantly better mental toughness as compared to low performer football players. Kimberly and Rank (2003) inferred that sexual orientation based variations exist in mental toughness, in this way, they offer that imperative bits of knowledge for creating programs which address the requirements of athletes in connection to mental toughness. These findings substantiate the assertion of Yadav (2014) additionally reasoned that mental toughness of national female volleyball players is higher than the national female kabaddi players. Singh and Kumar (2011) concluded that All India intervarsity soccer players altogether varied in mental toughness than their counterpart; inter-collegiate soccer players. With respect to open and closed skill athletes, mental toughness requires players to be emotionally in control with the ability to solve problems and deal with demands such as matches, training, media, travel, fatigue, loneliness etc. While these requirements may be assets in other sports, they are essential in open and closed skill athletes. Notwithstanding, it is hoped this study provides clues as to how players can gain a psychological advantage and enjoy the pursuit of excellence by developing and maintaining mental toughness. No longer is mental toughness deemed to be just a ‘gift’ but rather a reward for concentrated hard work to consistently give one’s best at all times.

It is concluded from the above findings that very minor and insignificant differences were found among various sport groups i.e. open skill athletes (basketball, handball and football) and closed skill athletes (archery, swimming and gymnastics) on the sub-variables; reboundability, ability to handle pressure, concentration, confidence, motivation and over all mental toughness.

The study will be considerably helpful to comprehend the mental toughness level existing among open and closed skill athletes. The sports coaches and trainers could extract benefits from the findings of the present research as it can help integrate the mental toughness variables in their training schedule from the very initial stages.

Conflict of Interest

The authors have not declared any conflicts of interest.

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