



ISSN: 2456-0057

IJPNPE 2018; 3(1): 2023-2026

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www.journalofsports.com

Received: 04-11-2017

Accepted: 05-12-2017

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Comparative effects of autogenic and visuo motor behavior rehearsal training on mental toughness of team games players

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Abstract

The present study was under taken to investigate comparative effects of autogenic and Visuo Motor Behavior Rehearsal (VMBR) training on mental toughness of team games players. Thirty (30) male football and handball players with age group 18 to 24 years from Lakshmi Bai National Institute of Physical Education, North East Regional Centre, Guwahati were purposively selected and all the subjects were divided randomly into three groups, each group consisting of 10 subjects. First experimental group (Handball players) under gone VMBR training and second experimental group (Football players) experienced autogenic training whereas control group was not involved in any training program except their daily routine and experimental groups trained three times a week. Psychological Performance Inventory developed by Loehr, J.E. (1986) was used to measure the mental toughness of handball and football players and data were taken at the beginning and after the experimental period of eight weeks. Descriptive statistics, analysis of covariance (ANCOVA) as statistical techniques were employed. Further Bonferroni post hoc means comparison was also used when F value was found significant.

The main effect for the treatment groups were significant at 0.05 level of significance for mental toughness; $F = 89.878$, $p = 0.00$, $p < 0.05$ with effect size .87. It indicates that there was a statistically significant difference in adjusting mean scores of experimental groups and control group. Post hoc results showed that difference between the VMBR group and Autogenic group 8.10, VMBR group and Control group 34.79, Autogenic group and control group 26.68 were significant at 0.05 level of significance. It may, therefore, be said that subjects of Autogenic Training Group and VMBR training group were found to have significantly higher mental toughness as compared of Control Group. Further on the whole it may be said that Subjects of VMBR Training Group were found to have significantly higher mental toughness as compared to their counter parts of Autogenic Training Group and Control Group.

Keywords: Autogenic training, visuo motor behavior rehearsal training, psychological performance inventory

Introduction

Mental toughness is broadly viewed as an essential and popular in modern sports. It enables an athlete to handle better his opponents during competition which help him to perform better than his opponents and also increased the possibility of winning whilst showing continuous improvements (Gucciardi, 2010; Jones, Hanton & Connaughton, 2007; Clough, Earle & Sewell, 2002) ^[4, 7, 3]. Although mental toughness is usually has to do with an athlete's ability to focus, ability to recover from failure, handle the pressure, willpower to continue in the face of adversity, and mental resilience (Bull *et al.*, 2005 & Jones *et al.* 2002) ^[2, 8]. To pursuit for performance excellence in sport includes the continuing development of four key facets of performance, namely physical, technical, tactical, and mental skills. Mental toughness is one of the most used but least understood terms in sports (Jones *et al.*, 2002) ^[8], Many athletes shows their mental toughness but in actual they do not fully understand exactly what this means in terms of their performance. The study developed a 'framework' for mental toughness outlining four major components including: mindset, training, competition and post-competition (Jones, 2007) ^[7]. Scully and Hume (1995) ^[12] stated that mental toughness considered as one of the most important factor of success in sport. Jones *et al.* (2007) ^[7] stated that wrestling coaches rated 82% mental toughness determine competition success of athletes. Therefore, current study was under taken to investigate the comparative effects of Autogenic

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and Visuo Motor Behavior Rehearsal training on mental toughness of team games players

Research Questions

1. Are Football players better in mental toughness than Handball players of Lakshmibai National Institute of Physical Education, North East Regional Centre, Guwahati after the Mental Training?
2. Is Visuo Motor Behavior Rehearsal training program better than Autogenic Training program for increasing mental toughness of team game players schools?

Objective

To compare adjusted mean scores of Mental Toughness of Visuo-Motor Behavior Rehearsal, Autogenic training and control groups by considering pre-mental toughness as covariate.

Hypothesis

There is no significant difference in adjusted mean scores of Mental Toughness of Visuo-Motor Behavior Rehearsal (VMBR), Autogenic training and control groups by considering pre-mental toughness as covariate.

Method

Thirty (30) male football and handball players with age group 18 to 24 years from Lakshmibai National Institute of Physical Education, North East Regional Centre, Guwahati were purposively selected and all the subjects were divided randomly into three groups, each group consisting of 10 subjects. First experimental group (Handball players) under gone VMBR training and second experimental group (Football players) experienced autogenic training whereas

control group was not involved in any training program except their daily routine and experimental groups trained three times a week. Psychological Performance Inventory developed by Loehr, J.E. (1986) [9] was used to measure the mental toughness of handball and football players and data were taken at the beginning and after the experimental period of eight weeks. It is the seven 6-item sub-dimensions and possible sub-dimensions scores range from a low score of 6 to desirable high of 30 and total scores from 42 to 210. Scores were recorded on a 5 point likert scale anchored by almost always, often, sometimes, seldom, and almost never. If items were worded positively then score was from 1 to 5 and if items were worded negatively then score was from 5 to 1.

First, normality assumption of data was checked by Shapiro-Wilk test, after that Levene’s test was used to test the Homogeneity of Variances between experimental and control group. Descriptive statistics and Analysis of Covariance (ANCOVA) was applied and further Bonferroni post hoc means comparison was also used when F value was found significant at the 0.05 level of significance.

Findings and Interpretation

Analysis of covariance required certain assumption which needs to be fulfilled before proceeding further. If assumptions are not fulfilled then the validity of the findings gets reduced. Following assumptions are need to fulfill:

- The First assumption of Normality was tested through Q-Q Plot Test
- The Second assumption of Normality was tested through Saprio-Wilks Test
- The Homogeneity of Variance was tested through Levene’s Test

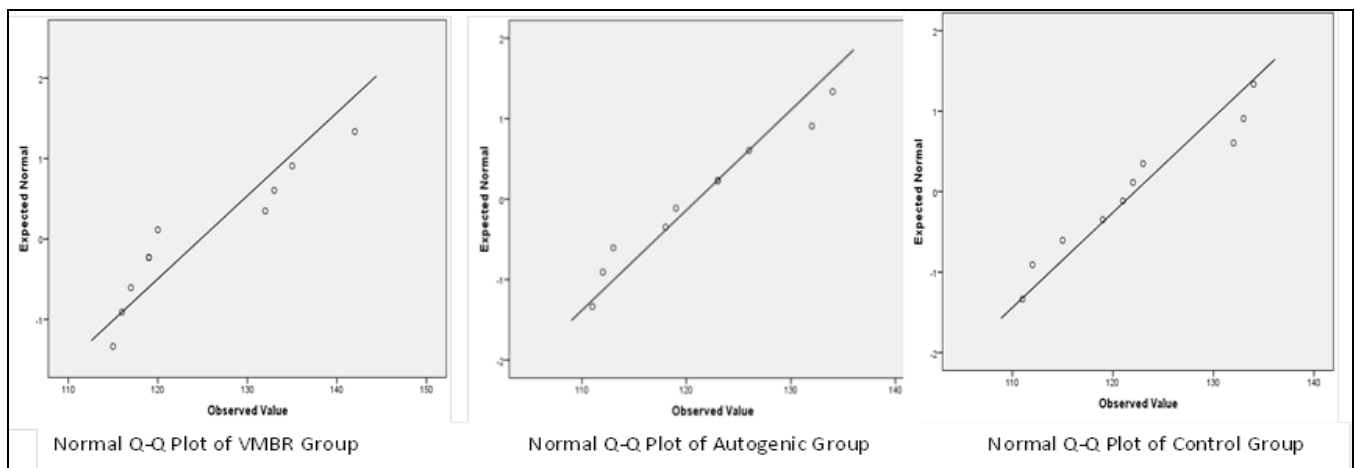


Fig 1: Q-Q Plot Test Showing Normality

It is clear from the figure-1 that data points are closed to the diagonal line in all the groups therefore pre mental toughness scores of all groups were normally distributed.

Table 1: Test of Normality for Mental Toughness of Experimental Groups and Control Group

Mental Toughness	Group	Shapiro – Wilk		Significant Level
		Statistics	df	
Mental Toughness	VMBR	.85	10	.06
	Autogenic Training	.94	10	.51
	Control	.91	10	.30

Table 1 revealed the normality of data for mental toughness as the p-value was found greater than 0.05 which signified that data were normally distributed. It can be seen from above table that Visuo-Motor Behavior Rehearsal (VMBR), Autogenic training and Control groups the dependent variable mental toughness was normally distributed.

Table 2: Test of Homogeneity of Variances for Mental Toughness of Experimental Groups and Control Group

Mental Toughness	Levine Statistic	df1	df2	Significant Level
Mental Toughness	.17	2	27	.85

Table 2 revealed that the assumption of homogeneity of variance has been as Levene's test ($p > 0.05$) was found to be insignificant at 0.05 level. It means equal variances assumed between experimental groups and control group.

The main objective was to compare adjusted mean scores of Mental Toughness of Visuo-Motor Behavior Rehearsal (VMBR), Autogenic training and Control Groups by considering Pre Mental Toughness as covariate. The data were analyzed with the help of one way ANCOVA by considering Pre – mental toughness as covariate and the results are given in Table 3.

Table 3: Summary of One Way ANCOVA of Mental Toughness by taking Pre- Mental Toughness of subjects as covariate

Source of Variance	df	SS _{y,x}	MSS _{y,x}	F _{y,x} – Value	Significant Level
Training Groups	2	6582.36	3291.18	89.88	0.00
Error	26	952.08	36.62		
Total	30	626549.00			

From the Table 3 it is evident that the adjusted F-value is 89.88 which is significant at 0.05 level with $df=2, 26$. It revealed that the adjusted mean scores of mental toughness of subjects belonging to Visuo-Motor Behavior Rehearsal (VMBR) Training, Autogenic Training and Control Groups differ significantly when Pre – mental toughness was taken as covariate. Thus the null hypothesis there is no significant difference in adjusted mean scores of mental toughness of Visuo-Motor Behavior Rehearsal (VMBR) Training, Autogenic Training and Control Groups by taking their Pre – mental toughness as covariate is rejected. In order to know which group's adjusted mean score of mental toughness differ significantly the data were further analysed with the help of Bonferroni Test and the results are given in Table 4.

Table 4: Treatment-wise adjusted mean, SE and significance of difference between adjusted means of Mental Toughness of Subjects

Treatment	Adjusted mean	SE	Autogenic Training Group	Control Group
VMBR Training Group	157.79	1.93	0.02*	0.00*
Autogenic Training Group	149.69	1.93		0.00*
Control Group	123.01	1.92		

*Significant at 0.05 level

From Table 4 it can be seen that the adjusted mean score of mental toughness of VMBR Training Group is 157.79 which is significantly higher than of Autogenic Training Group whose adjusted mean score of mental toughness is 149.69. It may therefore be said that subjects of VMBR Training Group were found to have higher mental toughness as compared to those of Autogenic Training Group.

Also the adjusted mean scores of mental toughness of VMBR Training Group and Control Group differ significantly (Vide Table 4). Further the adjusted mean score of mental toughness of VMBR Training Group is 157.79 which is significantly higher than those of Control Group whose adjusted mean score of mental toughness is 123.01. It may, therefore, be said that subjects of VMBR Training Group were found to have significantly higher mental toughness as compared of Control Group.

Lastly the adjusted mean scores of mental toughness of Autogenic Training Group and Control Group differ

significantly (Vide Table 4). Further the adjusted mean score of mental toughness of Autogenic Training Group is 149.69 which is significantly higher than those of Control Group whose adjusted mean score of mental toughness is 123.01. It may, therefore, be said that subjects of Autogenic Training Group were found to have significantly higher mental toughness as compared of Control Group.

On the whole it may be said that Subjects of VMBR Training Group were found to have significantly higher mental toughness as compared to their counter parts of Autogenic Training Group and Control Group. Also the mental toughness of subjects of Autogenic Training Group was found to be significantly higher than those of Control Group. The same can be seen in bar diagram presentation in Figure-2.

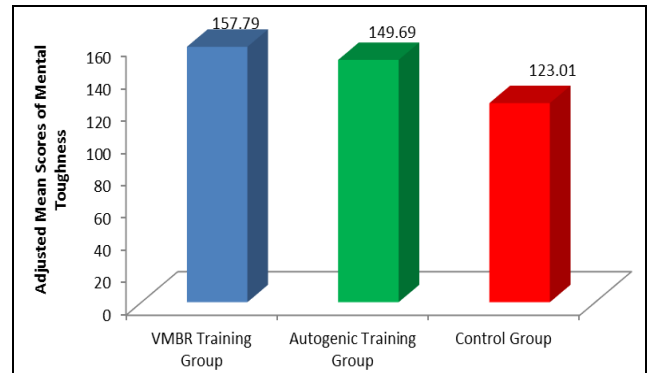


Fig 2: Adjusted Mean Scores of Experimental Groups and Control Group of Mental Toughness

Discussion of Findings, Conclusion and Recommendations

In the light of the present study it has been found that eight weeks of VMBR and Autogenic training significantly increased the mental toughness of team game players. Further VMBR training was found better than Autogenic training in improving mental toughness of team game players. This can be attributed to the fact that VMBR is based on the fact that imagination before the work to be perform can make the work easier and accurate, also possible to get intellectual and physical achievements with the practice of imagination beyond the limits of athletes. More directly related to the present study, Hall and Erffmeyer (1983) [6] conducted a study with two type of VMBR training a simple VMBR and VMBR with videotaped and reported that VMBR with videotaped significantly perform better in free throw shooting performance than VMBR training alone.

In Autogenic training athlete get into a simple posture (sitting in a comfortable chair or reclining), concentrate without any goal, and then use visual imagination and verbal cues to relax the body in some specific way. The exercises allow communication between the mind and the body, allowing athlete to influence body reactions that cannot normally be controlled, such as blood pressure, heartbeat, and body temperature. Whereas VMBR training allows athlete to realize his mistakes of motor performance and with the visualization practices help them to minimize errors and improve performance. Our finding are consonance with results suggested that more traditional mental practice techniques may be at a disadvantage without some sort of visual aid to assist the athlete in the process of image formation (LeUnes & Nation, 1989) [10].

The findings of current study are consistent with Gray (1990) [5], Noel (1980) [11], and Weinberg *et al.* (1981) [13] who found that VMBR practice was effective in enhancing certain areas of sport performance. Gray (1990) [5], beginning racquetball

players assigned to a VMBR with videotaped modeling group exhibited greater performance in forehand test of racquetball skill than did subjects in a relaxation/mental practice group. Hall and Erffmeyer (1983) ^[6] tested VMBR with women intercollegiate basketball players. They found that VMBR lead to significantly improved foul shooting. Gray (1990) ^[5]; Andre and Means (1986) ^[1] found that VMBR training lead to improved racquetball and Frisbee tossing performance, respectively. Overall, the evidence for VMBR has been supportive

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