

## Mental Skills Training: An Intervention for Athletic Coping Skills for Team Game Players

Sanjeev Kumar<sup>1</sup>, Swati Choudhary<sup>2</sup><sup>1</sup> Department of Physical Education, Central University of Punjab, INDIA.<sup>2</sup> Department of Physical Education, Central University of Haryana, INDIA.Email: [mander26sanjeev@gmail.com](mailto:mander26sanjeev@gmail.com)**Abstract**

The present research aim is to investigate the effectiveness of -(i) Visuo-Motor Behavior Rehearsal training (ii) Autogenic training for improving athletic coping skills of team game players. Material and Methods. Thirty (30) male team game players (mean  $\pm$  SD; age  $21 \pm 4$  years) were randomly selected from Lakshmibai National Institute of Physical Education, North East Regional Centre, Guwahati and each group had ten (10) subjects. All the subjects were randomly divided into 03 groups, i.e. experimental group-1: Visuo-Motor Behavior Rehearsal training group, experimental group-2: Autogenic training group and one control group. Experimental groups attended mental skill training thrice a week while control group did not attend any mental skill training except their daily schedule for 12 weeks. Athletic Coping Skills of team game players were assessed by Athletic Coping Skills Inventory. Results. Analysis of covariance revealed that experimental groups were significant for coping with adversity ( $F=33.79$ ,  $\eta^2 = 0.72$ ), peaking under pressure ( $F= 45.40$ ,  $\eta^2 = 0.77$ ), goal setting/mental preparation ( $F= 38.20$ ,  $\eta^2 = 0.75$ ), concentration ( $F= 66.46$ ,  $\eta^2 = 0.84$ ), freedom from worry ( $F= 78.01$ ,  $\eta^2 = 0.86$ ) and confidence & achievement motivation ( $F= 75.21$ ,  $\eta^2 = 0.85$ ), coachability ( $F= 32.25$ ,  $\eta^2 = 0.71$ ) and overall athletic coping skills ( $F= 321.28$ ,  $\eta^2 = 0.96$ ) at 0.01 level of significance. Further results of the study revealed that experimental groups and control group differ significantly at 0.01 level of significance. Post hoc results showed that significant difference was also found between Visuo-Motor Behavior Rehearsal and Autogenic Training groups at 0.05 level of significance. Conclusions. The study concludes that Visuo-Motor Behavior Rehearsal training program is better than Autogenic training program to significantly improve the athletic coping skills of team game players.

**Keywords:** Mental Skill Training, Athletic Coping Skill, Visuo-Motor Behavior Rehearsal & Autogenic Training, Team Game Players

**Introduction**

In modern world it becomes very necessary to enhance coping skills of athletes for achieving top performance in competition. Athletes who practice mental skill training are better performer and able to cope up with competition pressure. Successful athletes were characterized by better concentration, greater confidence and self-regulation of arousal, focus, determination, positive thinking & imagery training and commitment, since they had undergone mental skill training (Weinberg, R. S., Seabourne, T. G., & Jackson, A., 1981). Sport performance, however, depends

primarily on athlete's physical ability, but it has now become essential to examine the contribution of mental abilities for successful performance. Mental ability training was developed in the last two decades to enhance sportsmen success (Weinberg, R. S., Seabourne, T. G., & Jackson, A., 1981). To control emotions such as anxiety, stress, relaxation and arousal, mental skill training could be an effective means to enhance coordination and communication between mental & physical process of body of an athlete (Martin, K. A., Moritz, S. E., & Hall, C. R., 1999). Therefore, there are some specified relaxation techniques out of

which first one is Visuo-Motor Behavioral Rehearsal (VMBR), it is progressive relaxation and mental imagery practice developed by (Suinn, R.M., 1982). Visualization technique has been widely popularized in sports research and considered as significant component of VMBR. All over the world elite athletes like to have VMBR training as part of their pre competition mental skill training. VMBR training consist of three phases, first is relaxation phase to get accommodated for mental imagery, second is visualizing performance through various visualizing techniques, which should be planned and detailed as close as the real situation, and third one is very powerful phase of imagination, what they have visualize in the previous phase and finally how to implement that imagination while performing the actual skill under realistic conditions. VMBR training enhances sports performance of athletes by restoring the images and scenes through visualizing and gained experience (Behncke, 2004).

Autogenic Training (AT) is another form of relaxation technique developed by Schultz in 1930 and emphasizes on managing stress, anxiety and also stimulates relaxation response inside the body through planned exercises such as heaviness, warmth, calm and regular heart function, self-regulation of respiration, warmth in the upper abdomen area, and agreeable cooling of the forehead (Kanji, White, A., & Ernst, E., 2006) by decrease sympathetic tone and induces a general somatic disconnection (Kanji, White, & Ernst, 2006; Schultz, 1969). It enhances the feeling of self-control and relaxation during performance situations (Manzoni et al., 2008). Autogenic Training produces significant control of emotions and mood and it is the union of body and mind which results in better concentration, coordination and relaxation. At the time of competition there are many factors which influence the performance of athletes. VMBR and Autogenic training both are relaxation technique which ultimately increased

overall feeling of confidence and induced a more positive state of mind during training & competition (Lim & Sullivan, 2016). Athletes learn to handle pressure during tough conditions especially on ground during competition and progressively enhance coping skills through the training of mental skill (Reese, 2005). Coping Skills is an effort of mental, emotional and behavioral to cope with external and internal demands for stressful situations such as sports performance during competition (Crocker, Kowalski & Graham, 1998). Elite skilled athletes are more capable to handle painful situation & perform well during sports competition and showed that implementation of coping skills enhance success of sportsmen and to have more understanding about findings, similar research need to conduct (Crocker, Kowalski & Graham, 1998). Mental practice is equally significant as physical practice for enhancing skill in sports and mental skill training enhances performance by optimizing psychological variables related to performance (Hall, Barr & Rodgers, 1990).

India is a vast, populous, culturally and linguistically diverse country. Sport is one of the most popular activities among Indians but still appetite for international sporting success is underpinned which may be due to lack of systematic mental skill training adopted by Indian athletes. In modern era, competition become very tough and coaches understand that a small modification may help athletes to achieve success. For instance, in sport where a fraction of seconds decides winner and loser between a great and subpar performance. It is the Mental Skill Training (VMBR & Autogenic Training) that helps the athletes to become winner or loser and also aid to save fraction of seconds. In Indian context a few researches have been conducted related to mental skill training and on the basis of finding of few researches it is not possible to draw generalization. In view of this, and in the light of increasing the demand of VMBR

and Autogenic training, there is a need to conduct more researches to draw the conclusions about these training and to fill this gap the present study was planned. This is the warrant for the present study, which examines the effectiveness of two mental skills training programs with a sample of Indian national-level athletes. It explored the impact of autogenic training and visuo-motor behaviour rehearsal training on athletes' perceptions of their psychological characteristics measured using the athlete coping skills inventory. It evaluated how formal mental training can contribute to strengthening athlete's coping skills beyond the strategies that athletes acquire from their natural learning experiences in football and handball.

## Material and Methods

### Subjects

Thirty (30) male team game players (Football & Handball) were randomly selected from Lakshmibai National Institute of Physical Education, North East Regional Centre, Guwahati. The age of subjects ranged between 17 to 25 years and all subjects had participated at the national level competitions in their respective sport. Furthermore, all the subjects were randomly divided into 03 groups, i.e. experimental group-1: Visuo-Motor Behavior Rehearsal (VMBR) training group, experimental group-2: Autogenic training group and one control group. Each group consisted of ten subjects. Experimental groups had gone through mental training (VMBR & Autogenic training) thrice a week whereas control group did not attend any mental skill training except their daily schedule for 12 weeks. In the present study, Pretest-Posttest randomized sample design was used. Initially, the training programs were of 15 minutes then the duration was gradually increased upto 45 minutes and mental skill training were conducted on alternate days three times a week.

### Tool

Athletic Coping Skills Inventory (ACSI) constructed by Smith, Schutz, Smoll & Ptacek (Smith, R. E., Schutz, R. W., Smoll, F. L., & Ptacek, J. T., 1995) was used to measure the coping skills and its dimensions of team game players and performance were recorded in numbers. Athletic Coping Skill Inventory contains 28 items describing the scores of athletic coping skill and its seven sub-dimensions. Each sub-dimension scores are range from 0 to 12 and total scores from 0 to 84 whereas scores were listed on a four (4) point likert scale responded by almost never, sometimes, often, and almost always. Few athletic coping skill dimensions such as coping with adversity, confidence & achievement motivation, peaking under pressure, goal setting or mental preparation and concentration were worded positively and score was from 0 to 3 whereas freedom from worry components was worded negatively and score was from 3 to 0, coachability components questions were recorded positively and negatively both, test re-test method reliability coefficient was established, 0.47 for coachability, 0.87 for peaking under pressure and for remaining five sub-dimensions was greater than 0.70. Cronbach Alpha was used to established internal consistency and reported adequate reliability 0.62 for concentration, 0.78 for peaking under pressure and overall Alpha coefficient for all subscales combined was 0.86 respective subscales very well associated with existing sport psychological questionnaires shown by initial validity (Smith, R. E., Schutz, R. W., Smoll, F. L., & Ptacek, J. T., 1995).

Visuo-Motor Behavior Rehearsal Training Visuo-Motor Behavior Rehearsal training group follow the training into three steps i.e. Relaxation (through deep breathing subjects relaxed themselves for the duration of 3 to 5 minutes), Visualization helps in connection of skills with help of LCD projector for the duration of 5 to 12 minutes. Visual display consisted of photos and videos of other players and self.

Researcher helped the subjects to notice where the errors were or faulty movements that assisted to realize how they can fulfill mastery or perfection in the performance. Last phase of Visuo-Motor Behavior Rehearsal training was imagery practice through which subjects imagined what they had seen during second phase, tried to correct the errors through internal imagination thoughts and visual imagery involved how clearly one sees himself performing. During Visuo-Motor Behavior Rehearsal training participants feedback was taken to know about their sense of relaxation and imagination. Participants responses about the contribution of mental skill training to enhance interest into game were considered and their feedback was also considered to know up to what extent their concentration, confidence and perfection of movements of motor skills enhanced through the training of mental skill training.

### Autogenic Training

Autogenic training where athletes attended passively to certain body parts (Arms, Legs etc.) and speak internally to his body (My arms are heavy, my arms are warm etc.). Muscle stress activity was focused in that area where passive attention was concentrated. The subjects were instructed to listen to the recorded autogenic training practicing phrases slowly on a CD player. Every day after training athletes recorded their feelings about training and evaluated with the help of following scale + 2 = very good, +1 = more good than bad, 0 = neither good nor bad, -1 = more bad than good, -2 = very bad which helped the researcher to keep training program more effective. Standard exercises were included in autogenic training which were practiced with auto suggestive phrases such as heaviness feelings encouraged through heaviness exercise, warmth feelings encouraged through warmth exercise, calm and regular breathing feelings encouraged through respiratory exercises, strong and quiet heartbeat feelings encouraged

through cardiac exercises. In first week focused was given on arms, in second week focused was given on legs, similarly in third week focused was given on neck & shoulder and during fourth week focused was on chest, back & whole body through heaviness exercises. In fifth week focused was given on arms, in sixth week focused was given on legs, in seventh week focused was given on neck & shoulder and in eighth week focused was given on chest, back & whole body concentrated through warmth exercises. Two more exercises were practiced by players during ninth & tenth weeks i.e. through solar plexus exercises stimulate warmth feelings and through calm forehead exercises stimulate feelings of relaxation in the body respectively.

### Statistical Analysis

For the analysis of acquired data IBM SPSS (version 20.0.0) was used and Shapiro –Wilk coefficients test shows normality of data for overall athletic coping skills and its dimensions except confidence & achievement motivation of control group at 0.05 level of significance. Further the assumption of homogeneity of variance has been fulfilled for overall athletic coping skills and its dimensions as Levene's test coefficients were found insignificant at 0.05 level of significance. Thus, equal variances were assumed among visuo-motor behavior rehearsal training, autogenic training and control groups. One-way ANCOVA was used for analyzing the data by considering pre athletic coping skills and its dimensions separately as covariate. The significant level has been set at  $p < 0.05$ .

### Results

From the Table-1 it is evident that the adjusted F-values for coping with adversity ( $F = 33.79$ ,  $\eta^2 = 0.72$ ), peaking under pressure ( $F = 45.40$ ,  $\eta^2 = 0.77$ ), goal setting/mental preparation ( $F = 38.20$ ,  $\eta^2 = 0.75$ ), concentration ( $F = 66.46$ ,  $\eta^2 = 0.84$ ), freedom from worry ( $F = 78.01$ ,  $\eta^2 = 0.86$ )

and confidence & achievement motivation ( $F= 75.21$ ,  $\eta^2 = 0.85$ ), coachability ( $F= 32.25$ ,  $\eta^2 = 0.71$ ) and overall athletic coping skills ( $F= 321.28$ ,  $\eta^2 = 0.96$ ) are significant at 0.01 level of significance with  $df = 2, 26$ . It revealed that the adjusted mean scores of coping with adversity, peaking under pressure, goal setting/mental preparation, concentration, freedom from worry, and confidence & achievement

motivation, coachability and overall athletic coping skills of subjects belonging to Visuo-Motor Behavior Rehearsal (VMBR) Training, Autogenic Training and Control Groups differ significantly when Pre – adjusted mean scores of overall athletic coping skills and its dimensions were taken as covariate.

Table 1: Summary of One Way ANCOVA for Athletic Coping Skills and its Dimensions

Variables/Dimensions	Source of Variance	df	SS	MSS	F	p-value	Effect Size ( $\eta^2$ )
Coping with Adversity	Training Groups	2	104.97	52.48	33.79	P<0.01	0.72
	Error	26	40.39	1.55			
	Total	30	2347				
Peaking under Pressure	Training Groups	2	83.54	41.77	45.40	P<0.01	0.77
	Error	26	23.92	0.92			
	Total	30	2292.0				
Goal Setting/Mental Preparation	Training Groups	2	73.16	36.58	38.20	P<0.01	0.75
	Error	26	24.90	.96			
	Total	30	1967.0				
Concentration	Training Groups	2	105.68	52.84	66.46	P<0.01	0.84
	Error	26	20.67	.080			
	Total	30	2064.0				
Freedom from Worry	Training Groups	2	155.01	77.51	78.01	P<0.01	0.86
	Error	26	25.83	.99			
	Total	30	2266.0				
Confidence and Achievement Motivation	Training Groups	2	119.10	59.55	75.21	P<0.01	0.85
	Error	26	20.59	0.79			
	Total	30	2092.0				
Coachability	Training Groups	2	106.58	53.29	32.25	P<0.01	0.71
	Error	26	42.97	1.65			
	Total	30	2382.0				
Overall Athletic Coping Skills	Training Groups	2	5430.18	2715.09	321.28	P<0.01	0.96
	Error	26	219.72	8.45			
	Total	30	106168.0				

Significant at 0.01 level.



Bonferroni test was used in order to know which group's adjusted mean score of overall athletic coping skills and its dimensions are significantly vary and the results are given in Table-2.

Table 2: Group-wise adjusted mean, se and significance of difference between adjusted means of athletic coping skills and its dimension

Variables/Dimensions	Group	Adjusted Mean	SE	Autogenic Training Group	Control Group
Coping with Adversity	VMBR Training Group	10.64	0.40	*	**
	Autogenic Training Group	8.97	0.40		**
	Control Group	6.09	0.39		
Peaking under Pressure	VMBR training Group	10.31	0.30	*	**
	Autogenic Training Group	9.00	0.30		**
	Control Group	6.29	0.30		
Goal Setting/Mental Preparation	VMBR Training Group	9.47	0.31	*	**
	Autogenic Training Group	8.30	0.31		**
	Control Group	5.73	0.31		
Concentration	VMBR Training Group	9.89	0.28	*	**
	Autogenic Training Group	8.68	0.29		**
	Control Group	5.43	0.28		
Freedom from Worry	VMBR Training Group	10.52	0.32	*	**
	Autogenic Training Group	9.29	0.32		**
	Control Group	5.19	0.32		
Confidence and Achievement Motivation	VMBR Training Group	10.09	0.28	*	**
	Autogenic Training Group	8.87	0.28		**
	Control Group	5.24	0.29		
Coachability	VMBR Training Group	10.69	0.41	*	**
	Autogenic Training Group	9.04	0.42		**
	Control Group	5.87	0.44		
Overall Athletic Coping Skills	VMBR Training Group	71.53	0.93	*	**
	Autogenic Training Group	62.51	0.95		**
	Control Group	39.56	0.92		

\*Significant at 0.05 level

\*\*Significant at 0.01 level

From Table-2 it can be seen that the adjusted mean scores of coping with adversity, peaking under pressure, goal setting/mental preparation, concentration, freedom from worry, and confidence & achievement motivation, coachability and overall athletic coping skills of VMBR training and autogenic training groups differ significantly with control group at 0.01 level. It may, therefore, be said that subjects of VMBR training and autogenic training groups were found to have significantly higher overall athletic coping skills and its dimensions as compared to those of control group. Further it can be stated that adjusted mean scores of coping with adversity, peaking under pressure, goal setting/mental preparation, concentration, freedom from worry, and confidence & achievement motivation, coachability and overall athletic coping skills of VMBR training group and autogenic training group differ significantly at 0.05 level. It may, therefore, be said that subjects of VMBR training group were found to have significantly higher overall athletic coping skills and its dimensions as compared to autogenic training group. The same can be seen from figure-1 and figure-2 respectively.

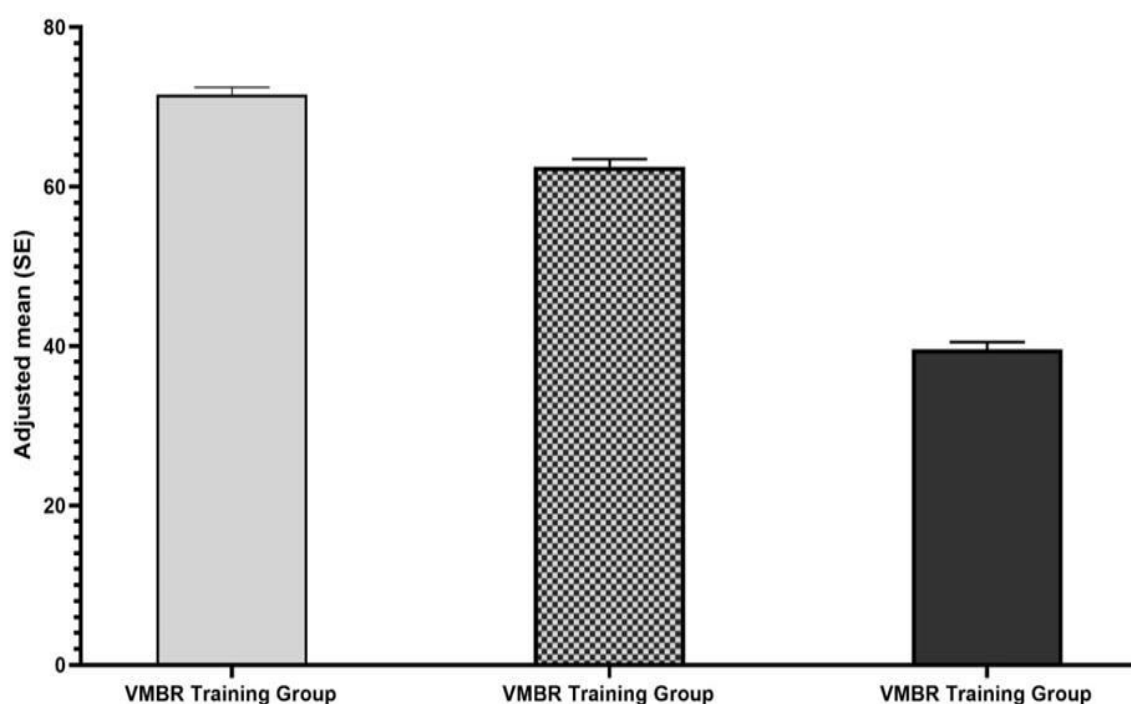


Figure 1: Descriptive adjusted mean scores of overall athletic coping skills of visuo- motor behavior rehearsal (VMBR), autogenic training and control groups

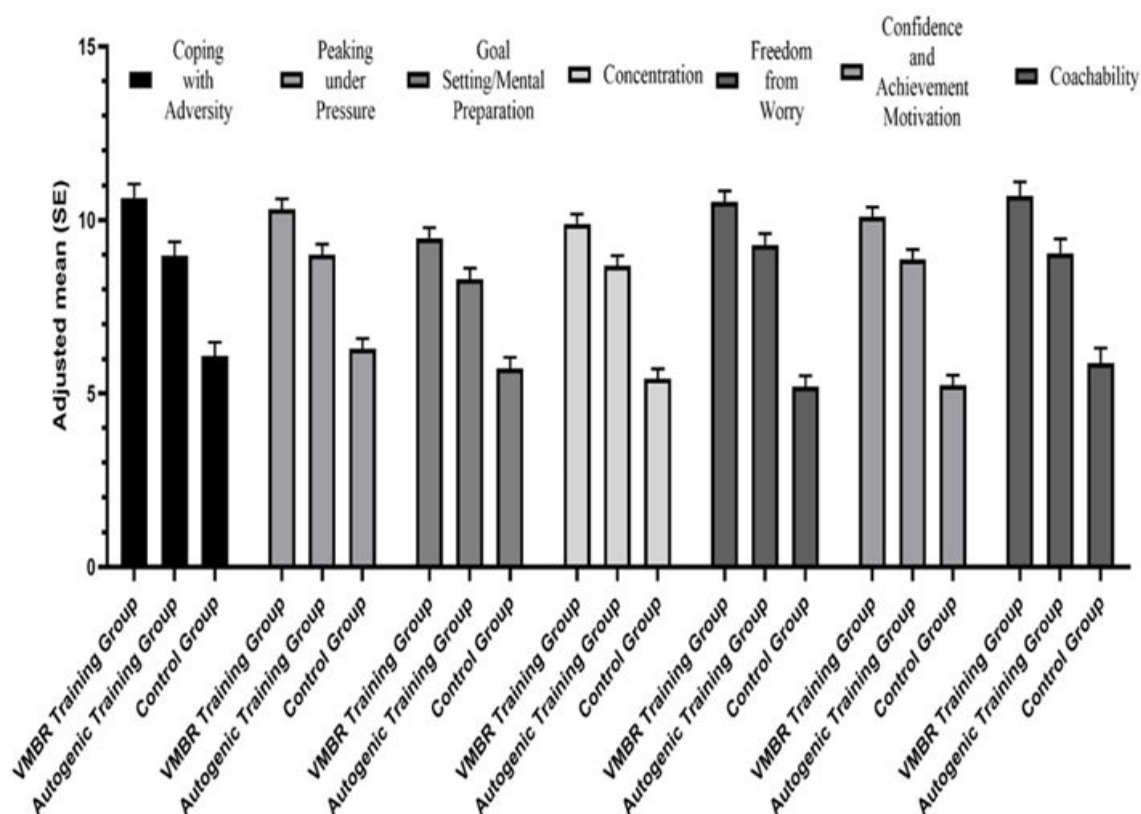


Figure 2: Descriptive Adjusted mean scores of Sub-dimensions of Athletic Coping Skills of Visuo- Motor Behavior Rehearsal (VMBR), Autogenic training and Control Groups

## Discussion

The main purpose of this study was to investigate the effectiveness of mental skills training (VMBR Training & Autogenic Training) for improving athletic coping skills of team game players. The findings of the present study revealed that mental skills training indeed improved the overall athletic coping skills and its sub-dimensions (coping with adversity, peaking under pressure, goal setting/mental preparation, concentration, freedom from worry and confidence & achievement motivation, coachability). It may be said that experimental groups had significantly higher overall athletic coping skills and its sub-dimensions as compared to control group at 0.01 level of significance. The researchers found that both the mental skill training groups significantly improved athletic coping skills and its dimensions as compared with control group. It may be endorsed due to the fact that both the e

xperimental groups experienced mental skill training programs which resulted the athletes to remain focused, calm, concentrated, controlled, bear positive attitude, set high goals, manage emotions effectively, realize to perform well under pressure, realize their own mistakes, not get easily distracted, not feeling pressure under poor performance and accept constructive criticism even when things are not in favor. Mental skill training assists athletes to behave properly that could easily recollect psychological states and movements. Mental skill training program is beneficial for learning, identifying errors, solving of problems, increasing concentration and practicing with pain. It mostly concentrated on goal setting, self confidence, mental imagery, attention and motivation which help in overall management of skill. For overall effective management of skills and to develop



mental stability, cognition, & body coordination, handling pressure mental skill training play a very important role (Wann, D., & Church, B., 1998). Thinking and planning are influenced by mental skill training (Cox, R. H., 2002).

Further from the findings of the present study it can be clearly seen that VMBR training program is better than Autogenic training program to significantly improve overall athletic coping skills and its sub-dimensions of team game players. It may be due to the fact that VMBR training is more productive than autogenic training because VMBR technique involves assessment of attentional strengths & weaknesses, recognition of situation specific problems & errors, factors affecting athlete performance and development of an training program. It also helps individual to feel more control on their thoughts, emotions and help in healing, making learning more creative. Main focus of this training is to develop confidence, attention of skill, mentally prepare for competition, find errors in performance, injury rehabilitation and advancement of techniques through visualization. It is possible for every athletes to effectively use visualization which put stress on goal analysis, achieving high performance through VMBR training that make it differ from other mental skill training such as self-taught imagery and mental rehearsal training. Authors of this paper feel that close relationships with athletes and VMBR training central features, such as source identification and competitive landscapes, sculpting for players, submission of strategies, good planning and the provision of teamwork are essential sources of positive results on coping skills. Psychological characteristics of mental image with feedback about the physical skill performance are combined in Visuo-motor behavior rehearsal (Lane, J. F., 1980). Visuo-motor behavior rehearsal training is used successfully in many sports such as diving, golf, gymnastics, cross-

country running, track & field (Lohr, & Scogin, 1998), Basketball (Gray & Fernandez, 1989), Karate (Weinberg, Seabourne, & Jackson, 1981), tennis (Noel, 1980) and racquet ball (Gray, 1990).

Autogenic training progressively breaks vicious stress cycle of individual and leads passive concentration in people (Carruthers, 1979). Findings of present study are in line of study conducted by (Murakami, Koike, Ashihara, Matsuno, Tazoe, & Katsura, 2006) which stated mental imagery training assist to develop positive self-image, self efficiency and diminished anxiety of patents. Learning psychological skills and positive mental perspectives improved the athletes quality of living (Orlick, T., & McCaffrey, N., 1991). Finding of the present study are in agreement of the research conducted by (Tenenbaum, G., & Eklund, R. C., 2007) which stated that mental skill training includes attention, stress management, arousal, motivation, goal-setting, self confidence, energy management, imagery, relaxation and energization, and mental toughness of athletes. Mental skill training enhanced swimmers performance and cognitive abilities (Golby & Sheard, 2006). A correlation was found between physical sensations of participant and muscular relaxation during autogenic training (Linden, W., 1990). Autogenic training leads better sense of well-being (Kanji, N., 1997). Autogenic training help to control chronic dizziness of subjects and also reduced significantly their trait anxiety (Goto, Tsutsumi, Kabeya, & Ogawa, 2012).

As per expert opinion for athletic coping skills, the cut-off point for each sub-dimension was 10. Thus, for players who scored below 10 in the certain sub-dimension needed more attention and training for improving their lack and pitfalls in developing coping skills. In visuo-motor behavior rehearsal training group coping with adversity, peaking under pressure, freedom from worry, confidence & achievement motivation,

coachability sub dimensions fall in greater strength skills as their adjusted average values were above 10 whereas in visuo-motor behavior rehearsal training group goal setting/mental preparation, concentration and in autogenic training group coping with adversity, peaking under pressure, goal setting/mental preparation, concentration, freedom from worry, confidence & achievement motivation, coachability sub dimensions fall in room for improvement as their adjusted average values were below 10 thus need more attention and training for improving pitfalls in developing coping skills.

### Conclusions

On the basis of results and findings of the present study it is concluded that mental skill training programs such as VMBR and Autogenic Training are very effective for improving overall coping skills and its sub-dimensions of team game players. Mental skill training (VMBR & Autogenic) program includes visualization, relaxation, concentration, goal setting and thought stopping skills. Therefore, it is suggested that the present study finding contributed to improvement in performance and positive psychological functioning of team game players. Further VMBR Training program is more effective than Autogenic Training program for improving athletic coping skills of team game players. Future research in this area should focus on obtaining larger sample sizes with different level of athletes.

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