SHORT COMMUNICATION-I

Ability to Relax Through Mental Training in Various Categories of Athletes

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Abstract

Ability to relax through mental training was investigated on 30 male subjects (age range 18 to 30 years). The subjects were divided into three groups (Aerobic, Anaerobic & Mixed), based on their game/event, and the energy system that primarily caters to their metabolic requirements. It was found that aerobic group of subjects exhibited greater ability than all other groups to relax with the progression of mental training programme as indicated by the appearance of significant reduction in minute Heart Rate at all corresponding stages of the sessions from the start to the end of mental training programme (MTP).

Key Words: **Heart Rate, Biofeedback, Psycho relaxation, Imagery**

Introduction:

The poor performance of Indian athlete is a matter of great concern to the coaches in general and sport scientists in particular. Inspite of the best training programmes, the Indian athletes fail to give their best in the International competition. One of the important analysis of performance of the athletes yield poor psychological preparation to display their best during the competition. A number of investigators have reported positive effect of mind training and biofeedback on the sports performance of athletes *(Hirota & Hirai, 1990, Feltz and Riessinger, 1990; Blumenstein et al., 1993; Couture et al., 1994 and Bakker et al., 1996).* These studies indicate that the use of imagery training with biofeedback offers the best potential to combat this situation. The literature is silent on the response of athletes to visual imagery in athletes undergoing different types of training. The present study has been planned from this angle and employs the imagery training along with biofeedback control on different groups of athletes. The results of the study are expected to file great utility in the Psychological training of the athletes for high level competitions.

Materials and Methods:

The study was conducted on 30 male subjects (age range 18 to 30 years) of Diploma course run by NIS Patiala. The volunteers were separated into three groups, based on their game/event, and the energy system that primarily caters to their metabolic requirements, as under:
Aerobic: N=3, Anaerobic N=9, Mixed N=18

These subjects were given the Heart Rate biofeedback during the mental training sessions. Mental training sessions were given once in a day to all the subjects for fifteen days and it comprised of following two parts:-

Psycho regulation training with music: First three sessions each lasting for 30 minutes were devoted to psycho regulation training with music. Important features of this session included head to toe relaxation, 1 to 10 count down, followed by light relaxing music for five minutes and then 10 to 1 back count down. Music cassettes known to produce relaxation effects in the body like " M*usic for Meditation*" by Van Raj Bhatia, " *Here*" and "*Now*" by Hariprasad Chaurasia on flute, by Hariprasad Chaurasia were used according to the taste of the subjects for the psycho regulation session.

Imagery Sessions: Remaining twelve sessions were devoted to imagery and consisted of the following:

(a) Each session was of thirty minutes duration. (b) First ten minutes of the session were devoted to simple psycho regulation followed by five minutes of warming up exercises in imagination. (c) Final fifteen minutes of the session comprised of imagery session concerning the game or event of the player/athlete. The steps of simple psycho regulation were similar for all the subjects whereas sports specific warm up exercises and the competition were given to the subjects for visual imagination.

For the measurement of Heart Rate the IR transducer was applied on the index finger of the left hand of the subject to display Pulse Rate per minute on LCD panel meter. Subject was asked to glow the maximum number of green colour bars through his mental power by following commands. More the number of glowing green bars the subject could light depicted higher level of relaxation achieved by him. Glowing of red bars showed higher level of tension. Balance was kept controlled at minimum position i.e. on anti-clockwise direction and feedback gain control at maximum position. Pulse rate observed before and during the progression of different mental training sessions in the subjects was recorded.

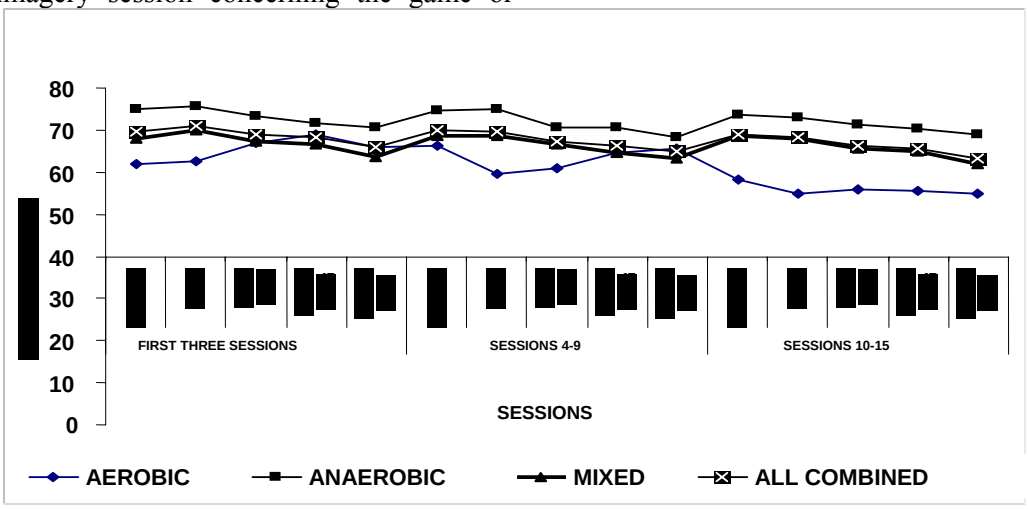

Figure 1: Pulse Rate Behaviour during Imagery Sessions among Different Groups of Athletes

Results and Discussion:

Comparison of autonomic (ANS) expressions in the nature of Heart Rate

among various activity groups (Table 1) during relaxation and imagery sessions of mental training programme reveal that aerobic group of subjects in general display lower mean values at all stages of the session as compared to all the other activity groups. This holds true for the general relaxation sessions, first set of imagery and second set of imagery sessions (Table 2). Lefevers (1971), Goldstein et al. (1977) and Becker et al. (1997) also found reduction in HR during relaxation sessions. Heart Rate values at all the stages of the session (HR balance, HR Initial, HR middle-I, HR middle-II, HR-final) are observed to be significantly lower in the aerobic group than all other activity groups at corresponding stages of the session.

A similar comparison of anaerobic group with the mixed and total reveal significantly higher mean values in the anaerobic group than the mixed and the total during the psycho relaxation and both the set of imagery sessions. Comparison of mixed with the total group (Table 3&4), on the other hand reveal lack of significant differences at all stages of the mental training programme. The above results indicate the following:

- Greater parasympathetic dominance in aerobic group of the subjects' right at the start of the mental training programme as evidenced by significantly lower Heart Rate in them as compared to the others activity groups.
- Greater ability of the aerobic group of subjects than all other groups to relax with the progression of mental training programme as is indicated by the appearance of significant reduction in HR at all corresponding stages of the sessions from the start to the end of mental training programme (MTP).

Table 1: Mean , Standard Deviation, Coefficient of variance of Heart Rate in general relaxation, first set and last set of Imagery sessions in different categories of players.

Sessions		AEROBIC					ANAEROBIC				
		Balance	Initial	Mid I	Mid II	Final	Balance	Initial	Mid I	Mid II	Final
1-3 Psycho relaxation	MEAN	62.00	62.56	66.78	69.00	65.89	74.86	75.52	73.18	71.51	70.56
	SD	8.35	7.19	13.99	15.37	9.85	9.18	7.35	7.73	7.75	7.05
	C.V.	13.46	11.49	20.95	22.27	14.95	12.26	9.74	10.57	10.84	9.99
4-9 Imagery	MEAN	66.22	59.67	61.00	64.44	65.50	74.50	74.93	70.67	70.60	68.16
	SD	8.78	8.62	8.35	17.26	13.45	10.13	14.77	8.98	8.55	8.98
	C.V.	13.25	14.44	13.68	26.79	20.54	13.59	19.72	12.71	12.11	13.17
10-15 Imagery	MEAN	58.11	54.84	56.00	55.50	54.95	73.62	72.99	71.22	70.29	68.82
	SD	6.39	5.81	4.30	3.88	5.43	9.66	9.35	8.95	9.06	13.88
	C.V.	10.99	10.60	7.68	6.99	9.89	13.12	12.81	12.57	12.89	20.16

Table 2: Mean , Standard Deviation, Coefficient of variance of Heart Rate in general relaxation, first set and last set of Imagery sessions in different categories of players

Sessions	MIXED					ALL COMBINED				
	Balance	Initial	Mid I	Mid II	Final	Balance	Initial	Mid I	Mid II	Final

1-3 Psycho relaxation	MEAN	68.07	69.93	67.37	66.46	63.56	69.50	70.87	69.05	68.23	65.89
	SD	10.53	9.42	9.17	8.74	9.15	10.69	9.41	9.77	9.63	9.20
	C.V.	15.46	13.47	13.62	13.15	14.39	15.38	13.27	14.14	14.11	13.97
4-9 Imagery	MEAN	68.50	68.69	66.45	64.65	63.31	70.07	69.66	67.17	66.41	64.99
	SD	11.14	9.89	9.53	10.30	10.55	11.04	12.25	9.67	11.08	10.67
	C.V.	16.26	14.39	14.34	15.94	16.67	15.76	17.59	14.39	16.69	16.41
10-15 Imagery	MEAN	68.67	68.09	65.62	64.84	62.07	69.09	68.23	66.33	65.53	63.38
	SD	8.31	7.46	8.39	7.32	8.30	9.59	9.37	9.29	8.70	10.92
	C.V.	12.10	10.96	12.79	11.28	13.37	13.89	13.74	14.00	13.27	17.22

Table 3: Statistical Comparisons

	AEROBIC				ANAEROBIC			
Sessions	**Balance/ Initial**	**Balance/ Middle-I**	**Balance/ Middle-II**	**Balance/ Final**	**Balance/ Initial**	**Balance/ Middle-I**	**Balance/ Middle-II**	**Balance/ Final**
1-3	0.14	0.83	1.13	0.86	0.28	0.71	1.41	1.90
4-9	2.19*	1.78	0.37	0.18	0.17	2.08*	2.16*	3.43**
10-15	1.57	1.12	1.44	1.56	0.34	1.33	1.85	2.08*

Table 4: Statistical Comparisons

	AEROBIC				ANAEROBIC			
Sessions	**Balance/ Initial**	**Balance/ Middle-I**	**Balance/ Middle-II**	**Balance/ Final**	**Balance/ Initial**	**Balance/ Middle-I**	**Balance/ Middle-II**	**Balance/ Final**
1-3	0.97	0.37	0.87	2.38*	0.92	0.29	0.84	2.42*
4-9	0.12	1.45	2.64**	3.52**	0.33	2.66**	3.13**	4.44**
10-15	0.54	2.68**	3.60**	5.83**	0.87	2.77**	3.69**	5.27**

*** Statistically significant at 5% level **statistically significant at 1% level**

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