EFFECT OF HYPOXIC TRAINING AND PRANAYAMA PRACTICES ON SELECTED BIO-MOTOR VARIABLES AND SOCCER PERFORMANCES AMONG COLLEGE SOCCER PLAYERS

An Abstract
Submitted to Bharathidasan university through the Department of Physical Education, Ganesar College of Arts and Science, Melaisivapuri, Pudukkottai in partial fulfillment of the requirements for the Degree of

DOCTOR OF PHILOSOPHY IN PHYSICAL EDUCATION

By
C.A. JAWAHAR

Under the Supervision of
Dr. N.VIJAYAREGUNATHAN

DEPARTMENT OF PHYSICAL EDUCATION
GANESAR COLLEGE OF ARTS AND SCIENCE
MELAISIVAPURI, PUDUKKOTTAI – 622 403

JULY- 2010
ABSTRACT

Sport and athletes have always been subjects for art. In early Greek Culture, where sport was so fundamental to social life, artists often used athletes as subjects, creating sculpture and decorating vases with athletes in action. Throughout history, artists have been intrigued by the physical beauty of the athletic body and the visual beauty of the athletic performance. Sport became the object for intellectual analysis and investigation during this century.

Sports participation and appreciation have become integral part of life. Competitive sports make tremendous demands on the physical conditioning, virtually, endurance and mental power of the participants. Only the finest can play to the best of their abilities. Each sport has its own pattern, muscle load, tempo and duration. Today the people of every country are more concerned with physical fitness than ever before as it has become the vital part of winning sports competition.

“Many sports are highly dependent upon the body’s ability to uptake and metabolism oxygen infects it is often the singular most important factor in deciding the quality of the performance.... Elite level (athletes) are generally chasing after only very small potential increases....” Whereas newcomers to sports are able to significantly increase their VO2 max with training. By the time athletes have reached the elite level they are generally chasing after only very small
potential increases each season. It seems that genetics’ has a lot to do
with “ceiling”. Hypoxic training has the ability to literally raise this
ceiling and provide improvements that would traditionally take years to
obtain, if they ever could.

The use of oxygen- depleted air for training, physical
improvement and curing illness is not new. Esculapius, the “blameless
physician” of Greek myth and father of hygiene, was said to have built
his healing temple on the mountains. Indians prepared their future
chiefs in a hypoxic environment to make them stronger than their
peers. Highland natives like those of the Caucasus Mountains are
famed for living far beyond 100 years.

The study of Hypoxic capacity has covered such matters as the
exchange of gases in the lungs during breath holding, the effects of
hyper ventilation and oxygen inhalation on breath holding time and
inter relation of barometric pressure and breath holding ability.

For this study, forty five men students studying Under Graduate
Degree course in Farook College, Calicut, Kerala, India, during the year
2007-2010 were selected at random as subjects. The age, height and
weight of the subjects ranged from 18 to 21 years, 163 to 171 cms and
59 to 67 kg respectively, and the means were 19.3 years, 167
centimeters and 61 kilograms respectively.
The subjects were assigned at random into three groups of fifteen each (n=15). Group I underwent Hypoxic Training, Group II underwent Pranayama Practices and Group III acted as Control (n=15). They underwent the respective training programme for duration of twelve weeks with a schedule of three days per week.

The dependent variables selected for this study were Speed, Explosive Power, Cardio Respiratory Endurance, Agility, Dribbling, Passing and Shooting. All the subjects were tested prior to and immediately after the experimental period on the selected dependent variables.

Among the Bio-Motor and Soccer Performance related variables, the following variables were selected as criterion variables namely Speed, Explosive Power, Cardio Respiratory Endurance, Agility, Dribbling, Passing and Shooting. All the groups were tested on selected criterion variables prior to and immediately after the training periods. Speed was assessed by 50 Meters Run, Explosive Power was assessed by Standing Broad Jump, Cardio Respiratory Endurance was assessed by Cooper’s 12 Minutes Run/Walk Test, Agility was assessed by Shuttle Run Test, Soccer Performance Skill such as Dribbling, Passing and Shooting were assessed by Warner test for soccer skills and Mor-Christian soccer test respectively.
The collected data were analysed by using dependent 't'-test to find out significant improvements. Analysis of covariance (ANCOVA) was used to determine the differences, if any, among the adjusted post-test means. Whenever 'F'-ratio for adjusted post-test mean was found to be significant, the Scheffe's test was applied as post-hoc test to determine the paired mean differences. The level of significance was fixed at .05 level of confidence for all the cases.

From the analysis of the data, the following conclusions are drawn:

1. The Experimental groups namely, Hypoxic Training group and Pranayama Practices group had significantly improved in Speed, Explosive Power, Cardio Respiratory Endurance, Agility, Soccer Dribbling, Passing and Shooting.

2. Significant differences in achievement were found among Hypoxic Training group and Pranayama Practices group with regard to all the selected criterion variables such as Speed, Explosive Power, Cardio Respiratory Endurance, Agility, Soccer Dribbling, Passing and Shooting.

3. The Hypoxic Training group was found to be better than the Pranayama Practices Group and Control group in developing Speed, Explosive Power, Cardio Respiratory Endurance, Agility, Soccer Dribbling, Passing and Shooting.