Chapter II

REVIEW OF RELATED LITERATURE

The reviews of related literature for better understanding of the study and to interpret the results have been presented in this chapter. A study of relevant literature is an essential step to get a full picture of what has been done and said abroad and in one’s own country with regard to the problem under study. Such a review brings about a deep and clear perspective of the overall field. The reviews were collected from the libraries of Annamalai Universtiy, Annamalai Nagar; Alagappa University, Karaikudi; Lakshmibai National Institute of Physical Education, Gwalior; Y.M.C.A.College of Physical Education, Chennai; Jawaharlal Insititute of Postgraduete Medical Education and Research (Jipmer), Puducherry; Pondicherry University, Puducherry.

A study of relevant literature on various literatures related to this study, aspects of continuous running and fartlek training on selected physical, physiological and skill related variables have been published. The research scholar has attempted in this chapter to project the literature related to this study.

Chidambararaja (1992) conducted a study to investigate the effect of continuous running and interval running on cardio respiratory endurance, speed, agility and muscular endurance. The criterion variables chosen namely cardio respiratory endurance was measured by cooper’s 12 minutes run/walk test, speed was measured by 50 meter run, agility was measured by 4 ×10 shuttle run and muscular endurance was measured by number of sit-ups per minutes .the findings of the study showed that the both the training groups improved the cardio respiratory endurance
and muscular endurance. Since the interval running improves the performance rapidly that of continuous running. The interval running group showed a significant difference when compare to continuous running and control group on selected criterion variables.

**Vaithianathan (1998)** conducted a study to investigate the effect of training and after on selected physical and physiological variables. The criterion variables chosen namely muscular strength was measured by pull-ups, muscular endurance was measured by sit-ups, cardio respiratory endurance was measured by cooper’s 12 minutes run/walk test, blood pressure was measured by stethoscope, vital capacity was measured by spirometer and respiratory rate was measured by stethoscope. The findings of the study showed that the circuit training improved the efficiency significantly in physical fitness variables.

**Subramanian Tamizhappan (2010)** conducted a study to investigate the effect of varied packages of physical training for preparatory and competitive periods on selected motor ability components, physiological variables, speed parameters and hundred meters run performance of school level boys. The motor ability components such as speed, leg explosive power, agility and flexibility were measured by 50 meters run, standing broad jump, 4X 10 yards shuttle run and sit and reach test respectively. Physiological variables such as resting pulse rate, anaerobic power and Cardio- Respiratory endurance were measured by counting the pulse per minute, Margaria Kalaman test and 12 minutes run and walk test respectively. Speed parameter such as 30 meters run performance from flying start(Locomotive Speed), 30 meters run performance from crouch start (Acceleration Speed with reaction speed) and 300 meters run performance (speed endurance) were measured by clocking the
time from start to finish of the runs respectively. The 100 Meters run performance was measured by taking the time from start to finish of the 100 Meters run. From the results of the study which was related with preparatory period training schedule the following conclusions were drawn. The package I and package II experimental groups training have significantly improved the leg explosive power when compared to control group. From the results of the study which was related with competitive period training schedule, the following conclusions were drawn. The package I, package II and package III experimental groups training have significantly improved the speed, flexibility, resting pulse rate, anaerobic power, 30 metres run performance from flying start, 30 metres run from crouch start and 300 metres run performance when compared to control group. The package I physical training group has recorded significant improvement in speed, leg explosive power, agility, flexibility, resting pulse rate, anaerobic power, 30 metres run performance from flying start, 30 metres run performance from crouch start, 300 metres run permanence and 100 metres run performance when compared to the package II and package III training groups. The package III training had recorded significant improvement in cardio respiratory endurance when compared to control group.

*Amusa (1999)* selected forty six college soccer players tested for running speed, agility and vo2 max. Soccer playing ability served as a criterion variable was measured by the rating of three experienced soccer coaches based on certain soccer skill and strategies. Vo2 max running speed and agility were considered important factor in soccer performance.

*Basunia (2008)* undertook a study to find the relationship between agility and flexibility to reaction time, vertical jump and sprinting speed of soccer players. The
findings of the study showed that there was no significant correlation between reaction time, vertical jump and speed. There was a high correlation between flexibility and speed. Agility was the most important variable in predicting of reaction time and speed of men soccer players.

*Roy (1994)* conducted a study on the strength and muscular endurance of soccer players. The criterion variables strength was measured by push-ups, pull-ups and muscular endurance was measured by sit-ups. The findings of the study showed that the defensive soccer players were superior to the forwards in strength and muscular endurance.

*Johnson (1992)* conducted a study to investigate the effect of a season of intercollegiate soccer participation on selected physical fitness. The criterion variables namely cardio respiratory endurance, agility and speed. The findings of the study showed that the soccer programme is likely to cause adaptation to the circulatory and respiratory systems that would result improvement in cardio respiratory endurance, agility and speed.

*Velmurugan and kalimuthu (2011)* studied the effect of interval training on selected speed parameters such as speed. The criterion variable at prior to and immediately after the training programme by using 50 mts run. The results of the study revealed that there was a significant difference between interval running group and control group on selected speed parameter. A significant improvement on selected criterion speed variable was also noticed due to interval running programme.

*Prabhakari, Narayani and Gopinath (2011)* studied the advances in modern technology have enabled our resent day society to exist in a world where the concept
of hard or even moderate physical fitness is absolutely necessary. The physical fitness of an individual upon his / her regular participation in physical activities. The criterion variables selected namely speed, muscular endurance agility, and cardio respiratory endurance and physiological variables breath holding time and resting pulse rate. The findings of the study showed that the physical activity showed a significant difference when compare to the control group on selected criterion variables.

*Dhanalakshmi (2011)* conducted a study to investigate the effect of aerobic exercise on selected motor fitness components of adolescent girls. The pre test and post test on motor fitness components was measured using 50 meters dash test and shuttle run. The finding of the study revealed that there was a significant difference on speed and agility for the experimental groups when compared to the control group.

*Sanjeevi and Gopinath (2011)* studied the quality of human resource can be judged by fitness level of its citizens. The thought of physical fitness activities in India there is long way to go. Physical education is the path to establish fitness and health related aspects in the society. The height (cm), weight (kg), explosive strength (standing broad jump in centimetres), strength endurance (pull-ups in numbers) and agility (10×4 shuttle run) were selected as criterion variable and tested. The result shows that the altitude and plain area boys are having same level of physical fitness. Hence, the plan area boys having better explosive power and strength endurance when compare with altitude area boys. So, that the overall physical fitness shows better for plain area boys.

*Laura Larsen (2011)* studied clearly demonstrate that participating in regular physical activity provides many health benefits. These benefits are summarized here. Benefits, such as increased cardio respiratory fitness, increased muscular strength, and
decreased depressive symptoms and blood pressure, require only a few weeks or months of participation in physical activity. There is strong evidence for the following: Improved cardio respiratory and muscular fitness.

**Sevell and Karthikeyan (2011)** studied the effect of aerobic interval training on selected endurance parameters such as strength endurance and cardio respiratory endurance. The selected criterion variable at prior to and immediately after the training programme by using bend knee sit ups and cooper’s 12 min run/walk test. The results of the study revealed that there was a significant difference between aerobic interval running group and control group on selected endurance parameter. A significant improvement on selected criterion endurance variable was also noticed due to aerobic interval running programme.

**Uma Kamalavathi and Shunmuganathan (2011)** investigated the effect of physical exercise on muscular endurance among sedentary men. The Physical exercises were selected as independent variable and muscular endurance was selected dependent variable. Muscular endurance was tested by using sit-ups. The result of the study shows that there was a significant improvement take place on muscular endurance due to six weeks physical exercise training program. It is strongly recommended by the investigator that physical exercise is done for preventive measures of disease like, asthma, heart problems, cholesterol controlling etc, maintain good body posture and increase muscle mass, bone density.

**Karthikeyan (2011)** studied the effect of interval and continuous running on cardio respiratory endurance. The criterion variable cardio respiratory endurance was tested on selected dependent variable at prior to and immediately after the training programme. The result of the study revealed that there was a significant difference
among interval training group, continuous running group and control group on cardio respiratory endurance. And also it was found that there was a significant improvement on cardio respiratory endurance due to interval training and continuous running whereas the improvement was in favor of continuous running group.

*Grishkumar and Thakkar (2012)* study was framed to find out the effect of fartlek training and interval running on cardio-respiratory endurance among college men athletes (runners). Fartlek training and interval running were selected as independent variables and the following dependent variable is cardio respiratory endurance. It was concluded that there was a significant improvement on cardio respiratory endurance due to Fartlek training and interval running when compared to the control group among the athletes (runners) and fratlek training outperformed than interval running towards improving cardio respiratory endurance.

*Alborz (2010)* investigated the effect of training load changes on the mood and performance indices in the male athletes. The 1600 meters running test was used for evaluation of aerobic capacity (the excess oxygen uptake). Results showed that the concurrent trainings have more effect on the performance compared to the endurance or strength training.

*Newton and Senthilvelan (2011)* studied the effect of stair claiming on selected endurance parameters such as cardio respiratory endurance and muscular endurance among football players. The selected criterion variables were assessed using standard tests and procedures, before after training regimen. cardio respiratory endurance and muscular endurance were tested be (pre) and after (post) the training program for both experimental and control group by using cooper’s 12 minutes run/walk test and bent knees sit ups respectively. The result of the study indicates that
the stair claiming group had significantly improved the selected dependent variables namely cardio respiratory endurance and muscular endurance however, control group did not show any improvement on the selected variables as it was not involved in any of the specific training means. It is inferred from the result of the present study that all the dependent variables were significantly improved due to the influence stair claming programme.

*Nigel Hetherington* (2006) studied the endurance running. It was suggested that the novel combined uphill-downhill training method is significantly more effective in improving the maximum running velocity at 35m and the horizontal kinematics of sprint running than other methods.

*Wise Blessed Singh* (2011) conducted a study to determine the effect of concurrent strength and endurance training and detraining on selected bio-motor abilities. The dependent variables selected were muscular strength, cardio respiratory endurance and aerobic power assessed by standard test and procedure. The data were collected prior to and immediately after the twelve weeks of training and also during the detraining period once in ten days for thirty days. The result of the study that muscular strength, cardio respiratory endurance and aerobic power can be improved significantly due to twelve weeks of concurrent strength and endurance training. It was also concluded that the muscular strength, cardio respiratory endurance and aerobic power can be maintained for ten days during the detraining period, there after these improved performance started declined towards the base line. Hence it is suggested that athletes should not undergo detraining for not more than ten days in a row. However this improved performance can be maintained for prolong by undergoing limited amount of training during the detraining period.
Jayasivarajan and Vasanthi (2011) conducted study to determine the effect of intensive interval training and fartlek training on cardio respiratory endurance and speed endurance of team game players. The criterion variable cardio respiratory endurance and speed endurance was measured before and after the completion of training programmes. The result revealed that cardio respiratory endurance and speed endurance had significant improvement due to intensive interval training and fartlek training when compared to the control group. The result when compared between the two experimental groups, it was found that fartlek training group had significant effect on cardio respiratory endurance and intensive interval training had shown significant effect on speed endurance training.

Sakthignanavel (1995) conducted a study to investigate the effect of continuous running, yogic pranayama and combination of continuous running and yogic pranayama exercise on cardio respiratory endurance, selected physiological and psychological variables. In the present study selected the following variables namely such as cardio respiratory endurance, forced vital capacity, forced expiratory volume in first second, peak expiratory flow rate, maximum expiratory pressure, maximum inspiratory pressure, 40 mm Hg, systolic pressure, diastolic pressure, self confidence, mental health and state anxiety. The three different experimental groups had undergone 14 weeks training programme according to the training schedule. The cardio respiratory endurance were measured through cooper twelve minutes run, forced vital capacity, forced expiratory volume in first second and peak expiratory flow rate were measured through spirometer, maximum expiratory pressure, maximum inspiratory pressure and 40 mm Hg were measured through Mercury Manometer, systolic pressure and diastolic pressure were measured through sphygmomanometer, self confidence inventory was standardised by Rekha
Agnihotri’s, mental health was measured through Trier personality inventory developed by Peter Becker and state anxiety was designed by Spielberger, Gorsuch And Lushene. The data were collected from the three groups before and after the training programme. The results shown that the yogic pranayama practice group and the combination of continuous running & yogic pranayama groups when compared to the continuous running group and control group significantly improved dependent variables namely such as cardio respiratory endurance, forced vital capacity, forced expiratory volume in first second, peak expiratory flow rate, maximum expiratory pressure, maximum inspiratory pressure, 40 mm Hg, self confidence, mental health and state anxiety. There is no significant difference between the experimental groups and control group in Systolic pressure and diastolic pressure.

*Kroff and Terblanche (2010)* conducted a study to investigate the kin anthropometric and pulmonary determinants of global respiratory muscle strength and endurance indices in an athletic population. The selected criterion variables namely force vital capacity; forced expiratory volume in first second and peak expiratory flow rate were measured through digital the spirometer. Maximum inspiratory pressure and maximum expiratory pressure were measured through the mercury manometer. The result shows that the endurance athlete found to have significant pulmonary function.

*Sakthignanavel and Vaithianathan (2010)* conducted study to determine the effect of continuous running, yogic pranayama and combination of continuous running and yogic pranayama practice on vital capacity. The vital capacity was measured through the computerized digital Spiro meter. The results show that the yogic pranayama practice group and the combination of continuous running & yogic
pranayama groups when compared to the continuous running group and the control group significantly improved their vital capacity.

*C. Chandrabose (1994)* conducted a study on therapeutic effect of yoga practice on patients suffering from bronchial asthma. Before and after yogic training both the groups were tested on Heart rate, Blood capacity, peak expiratory flow rate, Forced expiratory Volume in first second, maximum expiratory pressure, Maximum inspiratory pressure, 40 mm Hg test for Breath-holding. The researcher found that Forced vital capacity, forced expiratory volume in first second and peak expiratory flow rate significantly improved in the yoga training group compared with those of the control group. Systolic pressure, Diastolic pressure, Pulse pressure, Mean pressure and Rate pressure product had changed in yoga training group but did not show the significant differences. In the control group the above said variables remained practically unaltered.

*R. Rossi et al. (2011)* conducted the previous cross-sectional studies demonstrate positive associations of fat-free mass and negative associations of centrally distributed fat deposits with respiratory function in older adults. Few studies have evaluated whether greater losses of muscle and increases in fat are associated with more rapid decline in respiratory function in aging. The finding of the study increase in fat mass over five years was associated with concurrent FEV\textsubscript{1} and FVC decline. In analyses stratified by weight-change categories, men and women who gained weight (vs stable/lost weight) had more rapid declines in FEV\textsubscript{1} and FVC. In this well-functioning cohort, less muscle and greater abdominal fat were each associated with poorer lung spirometry cross-sectionally, whereas increase in fat mass over 5 years was associated with concurrent FEV\textsubscript{1} and FVC decline. Weight gain and
accompanying fat deposition may accelerate age-related declines in respiratory function.

*Man et al. (2003)* identified the Maximal expiratory mouth pressure is a well established test that is used to assess expiratory muscle strength. Low maximal expiratory mouth pressures do not always indicate expiratory muscle weakness. Cough gastric pressure provides a useful complementary test for the assessment of expiratory muscle strength.

*Evans and Whitelaw (2009)* conducted the Maximal inspiratory pressure (MIP) and maximal expiratory pressure (MEP) are simple, convenient, and noninvasive indices of respiratory muscle strength at the mouth, but standards are not clearly established. We discuss normal values in older subjects, estimation of LLN values, and the relationship between vital capacity and respiratory muscle strength, and offer a guide to interpretation of maximal pressure measurements. The approach should allow direct implementation of MIP and MEP in a pulmonary function laboratory.

*Sharma and Brown (2007)* conducted a study to investigate the spirometry and respiratory muscle function during ascent to higher altitudes. The selected criterion variables namely forced vital capacity and forced expiratory volume in first second were measured through digital the spirometer. Maximum inspiratory pressure and maximum expiratory pressure pressure were measured through the mercury manometer. The result shows that all the dependent variables were significantly improved due to the influence of higher altitudes.
Lalit Mohan Tiwari, Harpreet Singh and Rohit Sharma (2011) conducted study was to determine the comparison of vital capacity between above 19 years and under 19 years national level cyclist. To measure the vital capacity of all subjects computerized Spiro meter was used. A comparative analysis of selected dimensions—forced vital capacity (FVC), forced expiratory volume in 1 second in litters FEV1 (L), forced expiratory volume in 1 second divided by forced vital capacity (FEV1/FVC%), peak expiratory flow in litters per second PEF (L/S), maximal expiratory flow when 50% of the (FVC) is exhaled VMax 50% of above 19 and under 19 national level cyclist were analyzed by applying t-test. The result of the study showed that there is significant difference between above 19 years and under 19 years cyclist. $t_{(tab)} < t_{(cal)}$ at 0.01 level of significance. The parameters (FVC), FEV1 (L), (FEV1/FVC%), PEF (L/S) and VMax 50% showed significant difference because above 19 years national cyclists training is for long duration than under 19 years national cyclists. They practice in the morning and evening that increases their pulmonary capacity. The pulmonary capacity increases more if the practice session is of longer at sub-maximal level. Another reason may be that above 19 years age group cyclists lungs have reached their full maturity level due to which their vital capacity is more than under 19 years cyclists.

Vinod Kumar (2009) conducted a study was carried out for 24 long distance runners. The subjects were selected from Dr. Sivanthi Aditanar group of institutions, Tiruchendur, Tamilnadu. The subjects were divided into three groups that is Fartlek training group (FTG) Continuous training group (CTG) and control group (CG), they were undergone 45 minutes of training and 15 minutes for warm-up and warm-down. For this research the selected physical variables were Cardio Vascular Endurance (CVE) and Muscular Endurance (ME) and physiological variables were VO2 max.
(VOM) and Breath Holding Time (BHT). The CVE was tested by 12 minutes run and walk, bent knee sit-ups was used for test the ME, VOM was tested with Single stage sub maximal treadmill test and the BHT was tested by breath holding time taken in seconds. The result was found that the Cardio Vascular Endurance, Muscular Endurance and Breath Holding Time significantly improved among the groups. The Scheffe’s post-hoc test was used to find the significance difference between paired adjusted final means. The result was revealed that the FTG and CTG had significantly improved in CVE, and BHT than CG. The FTG group was significantly improved in ME than the CG. There was no any significant difference between the experiment groups of FTG and CTG.

_Sakthignanavel and Vaithianathan (2011)_ studied the effect of continuous running, yogic pranayama and combination of continuous running and yogic pranayama practice on respiratory pressure. It was hypothesized that the yogic pranayama practice group and the combination of continuous running & yogic pranayama group would significantly differ from the other two groups. The three different experimental groups had undergone 14 weeks training programme according to the training schedule. The respiratory pressures were measured through Mercury Manometer before and after the training programme. The results shown that the yogic pranayama practice group and the combination of continuous running & yogic pranayama groups when compared to the continuous running group and control group significantly improved their respiratory pressures.

_Subradeepan and Wise Blessed Singh (2010)_ study was framed to find out the effect of physiological variables on blood pressure and pulse rate in response to exercise. The selected dependent variables such as (systolic blood pressure, diastolic
blood pressure and pulse rate) were appraised using oscillometric method and
instruments of scientific standards at resting conditions and after exercise. The
analysis of data revealed that there is a significant exaggeration on systolic blood
pressure and pulse rate in response to one-mile run. These finding suggest that
exercise induces considerable alterations in physiological parameters.

_Dhanapal and John Kennedy (2011)_ carried out a comparative study of
selected physical and physiological variables between hills and coastal area school
students. Physical variable such as speed, cardio respiratory endurance and
physiological variables such as breathe holding time and pulse rate. The result of the
study revealed that the hills area school students were showed statistically
significance from the following physical variable namely speed and cardio respiratory
endurance better than the coastal area school students. And also the result showed
statistically significance from the following physiological variable namely breath
holding time and pulse rate better than the coastal area school students.

_Palanisamy et al. (2011)_ study was conducted on sixty college students who
were studying government Arts College for men, Salem, Tamilnadu. All the three
groups were tested on selected criterion variable such as resting pulse rate was
assessed by radial pulse manual method. The result of the study revealed that there
was a significant difference among the experimental groups and the control group
before and after the training period on resting pulse rate. The hypoxic training group
improved significantly on the selected dependent variable on resting pulse rate when
compared to the continuous running group.

_Ramkumar (2011)_ conducted a study to determine the effect of aerobic
exercise on resting pulse rate and breathe holding time among middle age men. The
data collected on selected criterion variables such as resting pulse rate and breath holding time were measured by counting the pulse for one minute at resting condition and holding the breath for maximum duration in seconds at before and after the eight weeks of aerobic exercise as pre and post test. The result of the study revealed that there was a significant difference between experimental group and the control group before and after the training period on resting pulse rate and breath holding time. There was a significant decrease on resting pulse rate and there was a significant improvement in breath holding time. However the improvement was in favor of experimental group due to eight weeks of aerobic exercise programme.

Madhankumar (2011) compared the effect of 12 weeks jogging and asana on selected resting pulse rate of obese men. Test was conducted for resting pulse rate. Resting pulse rate was significantly reduced by effect of jogging and asana training for the experimental group when compared to the control group. Significant differences in favour of jogging group are seen in the resting pulse rate.

Nayer et al. (1975) investigated the effects of Yogic exercises on human physical efficiency. The studies were conducted on 53 cadets of National Defence Academy. The parameters of assessment, included ventilation, minute volume, rate of respiration, oxygen respiration, pulse rate and blood pressure, mechanical efficiency and maximum oxygen uptake, four additional assessments were made under resting condition, viz. Vital Capacity (VC), Maximum Breathing Capacity (MBC), Forced Expiratory Volume (FFV 10 Sec) and Breath Holding Time. All the 3 groups showed significant decrease in pulse rate during exercise. The yogic group in addition recorded a highly significant increase in breath holding time (from 54 to 106 Sec and VC from 1.98 to 2.89 L/m² body surface area). The remaining two groups
recorded only significant increase in VC, Ventilation, minute volume, rate of respiration, blood Pressure, Mechanical efficiency maximum oxygen uptake capacity and MBC remained unaltered in all the 3 groups.

**Chinnaswamy (1992)** conducted a study on the effect of asanas and physical exercise on selected physiological and biochemical variables among school boys. The initial scores were measured for the selected physiological and biochemical variables, namely pulse rate, systolic blood pressure, diastolic blood pressure, haemoglobin blood content and blood sugar land. Asana and physical exercise had significantly improved haemoglobin contains – blood sugar, pulse rate and diastolic pressure. There was no difference in systolic pressure in which either physical exercise group or asana group made any effect.

**Katona et al. (2011)** assessed the effect of blood pressure (BP) status of high school students and factors influencing BP. Methods: Subjects filled out a questionnaire and three repeated BP measurements were taken. Results: Boys had significantly higher systolic BP (+11.3 mm Hg) and diastolic BP (+2.2 mm Hg) than girls (p < 0.001). There was a positive correlation between weight and BP (r (syst) = 0.42, r (diast) = 0.29), height and BP (r (syst) = 0.33, r (diast) = 0.15), body mass index (BMI) and BP (r (syst) = 0.31, r (diast) = 0.27). Multiple regression was used for statistical analysis. Gender (β = 0.36), BMI (β = 0.25), hypertension of parents (father β = 0.04 and mother β = 0.02), smoking, alcohol consumption and age determined systolic outcomes in descending order. For the diastolic model, BMI remained a strong determining factor (β = 0.25) and gender was also significant (β = -0.09). Entering independents together accounted for 28.2% of the total variance in systolic and for 18.1% in diastolic BP. Conclusion: Body weight is central to
determining BP. Because that is an alterable cardiovascular risk factor, we presume that lifestyle modification will not only result in reduced weight, but also in decreased BP.

Soulas et al. (2005) conducted a study to evaluate the qualitative aspects of training that elite middle distance runner’s employ throughout their yearly training season to improve performance. Additionally we examined how their training methods correspond with the relevant research. We collected information about the usage of interval training, continuous running, uphill running, and strength exercise during the week throughout the seasonal training phases. Ten Spanish coaches, chosen according to their athletes' performance in International Events, took part in the present investigation. Interval running at 75-85% of VO$_{2\text{max}}$ and repeated running up to 85% of VO$_{2\text{max}}$ are mostly used in the build-up phases and less in the pre-competitive and competitive phases, whereas interval running at 85-95% of VO$_{2\text{max}}$, repeated running above 85% of VO$_{2\text{max}}$, and interval sprinting were mainly used in the pre-competitive followed by the competitive phase. Fartlek training and low and moderate intensity continuous running proved to be the most popular methods of continuous running throughout all the training phases, while high and low-high intensity running were mainly used during the pre-competitive and competitive phases. Continuous and interval uphill running is mostly used in the special phase and in a lesser amount in the basic and pre-competitive phases. Circuit training and resistance exercise are used mainly in build-up phases. Plyometrics and resistance running are used in a very small amount in all training phases. The training methods that elite runners employ to improve performance are mostly in line with research findings. However, in some cases recent suggestions, although proven to be efficient by research, seem to have no practical implementation.
Muthukumar and Sundaramoorthy (2011) studied the purpose of the study was to examine the influence of specific skill training package on selected performance variables among inter collegiate soccer players. Kicking ability and shooting drills were selected as dependent variables for this study. The results of the studies showed that there was a significant difference between drill training group and control group on selected criterion variables such as passing ability and kicking ability. And also it was found that there was a significant improvement on selected criterion variables due to drill training. It may be due to the nature of the training.

Helgerud (2001) studied the aerobic endurance in soccer players improved soccer performance by increasing the distance covered, enhancing work intensity, and increasing the number of sprints and involvements with the ball during a match.

Hoff and Helgerud (2004) conducted study to determine the effect of endurance interval training using an intensity at 90-95% of maximal heart rate in 3- to 8-minute bouts have proved to be effective in the development of endurance, and for performance improvements in soccer play.

Bupesh et al. (2011) conducted a study to determine the effect of aerobic training on performance related variables of footballers. The criterion variables selected for the study were kicking for the distance and dribbling. The result of the study revealed that there was a significant difference among the experimental and the control group before and after the training period on kicking for the distance and dribbling.

Manoj Kumar and Thirumalai Kumar (2011) conducted a study to find out the effect of specified football drills with and without relaxation technique on selected
game skill variables among school level football players. The dribbling ability Morgan Christian soccer ability test was used, it was measured in seconds and it was a standardized test. The result of the study revealed that both the experimental training namely specified football drills with relaxation technique and specified football drills without relaxation technique had significant improvement on selected skill variables namely passing, shooting and dribbling among the school level football players. There is no significant difference on the improvement of selected skill variables between both the experimental groups among the school level football players.