Chapter II

REVIEW OF RELATED LITERATURE

“The literature in any field forms the foundation upon which all future work will be build” (Agarwal, 1975). Literature study is very important for a researcher to know about the kind of work already done connected to the problem taken for study. This kind of review helps the researcher to get an overall view of the field of study. The review of literature is done in a critical manner and various articles are studies and a brief summary of the literature studies related to the problem taken for study is explained here. The reviews were collected from the libraries of various Universities and also through the Internet (Web Sources). The reviews of the literature have been classified into different categories and they are listed below.

1. Study associated with core strength training

2. Analysis and studies related to mobility training

3. Summary of review of related literature

Studies Related to Core Strength Training

The work of Martuscello et al., (2013) clearly briefing that electro myographic (EMG) role of 2 core muscles (lumbar multifidus transverse abdominals, quadrates lumborum) in relation to physical fitness exercises among healthy adults. The study participants around 252 met the reviews inclusion and exclusion criteria. The major five physical fitness exercises like core, its stability, device, free weight and noncore free weight. The comparison has been made
through the strength of evidences. The assessments were summarized among exercise types. The critical findings discloses that moderate level of LM EMG activity found to be higher at the time of training with free weight along with device activities and is same during core stability and ball/devices exercises. During these exercises transverse abdomen EMG activity is same. There were no attempts done on quadrates L EMG activity on body suit exercise. It also suggested from the available facts, the specialists may concentrate on adding multiple weight exercises, other than core for adequately train the core muscles in their athletes and clients.

Romero-Franco et al., (2013) used BOSU and Swiss ball as bases if instability to analyse the minimum period stabilometric responses of proprioceptive training among players. Proprioceptive training based on six 25-minute exercise sessions. They were used as unstable platforms. This exercise developed minimum period effects on the stabilometry of players. Similarly, scope for enhancement was found deliberately in the stabilometry of players on starting exercises.

Zemkova and Hamar (2013) compared the power output in focused squats and chest presses over chest performed without and with countermovement along the two support .Sixteen students did through four various days with 3 repetitions of(a) squats on support basements and bosu ball and (b) chest presses in the bench and Swiss ball. Exercises were performed with and without countermovement (CM) using the best possible effort in concentric phase of lifting. The load was
increased to 1RM under stable conditions. Computer assisted system was used for these measurements. As a parameter of the capability to use elastic energy was considered the difference in average power in focussed phase of load train ups (ΔP) performed with and without CM. The method to avail energy during CM workout is more profoundly adjusted in unsteady than steady atmospheres. Alternatively, there is similar enhancement of energy in focused state of CM squats on steady and unsteady surface regardless of weights lifted. Besides the type of exercise, this may be ascribed to different degree of non stable items used (Swiss ball vs. Bosu ball).

Krist, Dimeo and Keil (2013) proved the effects of progressive resistance through experiments. The gradual increase resistance camp conducted. The participants belong to the age group of 77 years and the exercises were allotted for eight weeks. Mobility with muscle ability related to both limbs enhanced and also the same time the life quality not proved reasonable modifications. The training was conducted two times a week through 2 months period of time showed improvement on mobility and muscle strength with the age group 77-97 years by means of deficient mobility.

Delmore, Laudner and Torry (2013) purpose was to identify the varying activation levels of the adductor longus during common hip adductor exercises. Participants were 24 physically active, college-aged students. Main measurement outcomes was Peak and average electromyographic (EMG) activity of the adductor longus muscle during the following six hip adductor rehabilitation
exercises: side-lying hip adduction, ball squeezes, rotational squats, sumo squats, standing hip adduction on a swiss ball, and side lunges. The side-lying hip adduction exercise produced more peak and average activation than any other exercise (p<.001). Ball squeezes produced more peak and average activation than rotational squats, sumo squats, and standing adduction on a swiss ball (p<.001). Ball squeezes had more average activation than side lunges (p=.001). All other variables for peak activation during the exercises were not statistically significant (p>.08). These results allowed us to provide an overall ranking system (highest to lowest muscle activation): side-lying hip adduction, ball squeezes, side lunges, standing adduction on a swiss ball, rotational squats, and sumo squats. This study provides a ranking system on the activation levels of the adductor longus muscle for six common hip adductor rehabilitation exercises, with the side-lying hip adduction and ball squeeze exercises displaying the highest overall activation, respectively.

An attempt to consolidate the all research works concerned with player activities and the stability camp was made by Reed, Ford, Myer and Hewett (2012). By adopting a systematic approach it was found out that 179 articles can be considered for preliminary review. The study included the articles that approached a interrogation targeted towards the core, benchmarked an output subjected to sport performances. The analyses involving test category people whose ages were greater than equal to 65 were omitted. It was found out that only 24 articles suited the criteria for review and the results were proved using the scale
of Physical Therapy Evidence Database (PEDro). To make the study easier the articles were divided in to three categories like general, lower extremity and upper extremity (n=6). In most of the studies, more profound exercise programmes were used in alignment with core stability training. Many studies proved that there is furtherance in the general and core strengths including maximum squat load and vertical leap. Vast majority of the studies gave results that there were no significant improvement in the strength and stability measures following training. Additionally, it was concluded from these studies that the core stability as the primary goal for enhanced output of camp had combo findings.

Sharma, Geovinson and Singh (2012) worked to strengthen the trunk instability exercise on line with vertical jump findings and variables of static balance among players of volleyball. The main goal was to achieve to stability for spine over pelvis and trunk. The ideas must be considered for plays including jump along with spine instability. Two groups each 20 were formed among volleyball players with unstable trunk and experimental. The leg lowering test was conducted to analyze the degree trunk ability. Various jumps were performed to get back the abilities and test wobble was made to analyze balance. Pre and post data were recorded through nine-week training program and statistical analysis was done using SPSS 16. In 9 week core program, the stability of trunk (P<0.001), difference of Block (BD) (P<0.01) were found to be advanced when compared with (C) group through paired T test. No significant improvement felt through other jumps and static balance were improved but not significant while
compared between groups. Hence the training program enhances trunk ability in stable means and block difference felt improved.

The activity of back muscle during upper limb dynamic exercises while standing and to identify the possibility of muscle strengthening is possible due to dynamic exercises evaluation, an attempt has been made by Tarnanen et al., (2012). Using surface electromyography, among twenty healthy women the dynamic activity of obliques externus abdominis, rectus abdominis, multifidus and longissimus muscles during unilateral shoulder or dynamic bilateral exercises without or with fixation of the pelvis were counted. During isometric contraction, For comparative reference, the trunk muscle activation was taken. With the unilateral shoulder adduction and bilateral shoulder extension, the time of reference exercises were found to be 60% greater than the abdominal muscle activity. With the shoulder extension exercises and unilateral shoulder abduction, the activity level exercise reference was greater than 60% when compared to the back muscle activity. The core muscle activation was found to be out reached in the standing position during the upper limb exercises. The extemporation of the core muscles were fixed with the pelvis during adduction and unilateral shoulder abduction, unilateral shoulder extension and bilateral shoulder extension.

Queirozet et al., (2010) matched the trunk stability and hip muscles in 4 alternatives of Pilates stabilizing exercises in the quadruped position. Healthy subjects having some experience were selected as participants in Pilates routines. Surface electromyographic signals of multifidus, iliocostalis, gluteus maximus,
external and internal oblique muscles and rectus abdominis were measured in four knee workouts: antverted pelvis with extended trunk; retroverted pelvis with flexed trunk; neutral pelvis with trunk parallel to the ground; neutral pelvis with inclined trunk. The pelvis with flexed trunk position brought significantly augmented external oblique and gluteus maximus muscle activation. The antverted pelvis with trunk greatly enhanced multifidus activity. The neutral pelvis position elevated to remarkable lower activity of all muscles.

Marshall and Desai (2010) studied the muscle activity during advanced Swiss ball exercises. After orientation session, 6 different "advanced" Swiss ball exercises in a randomized order performed. The obtained signals were normalized to maximal voluntary isometric contractions conducted before testing for each muscle. The impact of this study highlighted that the Swiss ball roll elicited muscle activity in triceps brachii (72.5+/−32.4%) and VL (83.6+/−44.2%) align with the intensity suggested for strength exercises among advanced trainers. Rectus abdominis activity was intensified during the bridge exercise (61.3+/−28.5%, p<or=0.01). This was the only exercise to elicit RA muscle activity commensurate with a strength training effect. The recalling of the exercises evident that, abdominal activity that requires a higher number of repetitions for an endurance training adaptation. In addition to that this study has paved evidence for one advanced Swiss ball exercise providing a significant whole-body stimulus, the practical inconvenience and risks of performing these perplexed Swiss ball exercises may outweigh potential benefits.
Behm, Drinkwater, Willardson and Cowley (2010) explained the importance of instability resistance training for athletic, nonathletic, and rehabilitation conditioning. The anatomical core is fixed as the skeleton axis and all soft tissues with a proximal attachment on it. An interlink between passive active muscle and neural subsystems provide Spinal stability.

Kibele and Behm (2009) compared the impact of a 7-week unstable and stable resistance training program on the estimation of strength, balance, and functional performance. The results revealed that there were no much difference between unstable and stable resistance training and the training effects were independent of gender. This study has demonstrated that instability resistance training may be considered as effective traditional stable resistance training for inexperienced resistance trainers. Based on the results of current study and the literature, instability resistance training should be considered in connection with traditional stable training to give a different variety of training experiences without sacrificing training benefits.

Sato and Mokha (2009) conducted a six weeks program of CST on recreational and competitive runners on various parameters. 28 healthy adults were subjected separated into 2 groups (14 each) using test-retest method. The GRF variables were assessed by calculating active vertical GRFs, duration of the 2 horizontal GRFs and by calculating peak impact, Lower-extremity stability has been assessed using the Star Excursion Balance Test. On outdoor tracks a 5000-m run time was measured. In order to assess the influence of CST lies on each of the
dependent variable, the variance was subjected to Mixed-design analysis. After a period of six weeks, a markable interaction took place among the CST group by showing timings of fastering in the 5000-m run. Moreover CST does not affect the lower leg stability and the GRF variables. Hence, the result suggests that the core strength training might be an efficient program method found in the enhancement of runners performance.

The free weight exercises and trunk muscle activity during stability ball has been studied by Nuzzo et al., (2008). A testing session with nine resistance-trained men were conducted which includes squats and dead lifts with approximate loads of 50, 70, 90 and 100% of IRM and also isometric contraction experiments with three stability ball exercises is also completed. From the rectus multifidus, longissims, abdominus, external oblique, and the average integrated electromyography (IMEG) was analyzed at the time of all exercises. Further, the muscle activity of L1 during DL at different percentages of IRM was significantly greater than in QP and PT whereas, RA and EO show no significant differences during any exercises undertaken. From their analysis it was significant that the stability ball exercises wont provides required stimulus in increasing hypertrophy or muscular strength and hence it was recommended DLs and SQs for the increase hypertrophy and strength.

Cowley et al., (2007) investigated the various issues in measuring the efficacy of instability resistance training. The bench press test and barbell chest-press on different situations with fourteen women and to test abdominal power by
two field tests. This was experimented to bring the outcome of influence of platform on work capacity and strength and have found that the platform had no influence on strength. For the stability ball group the performance was improved by 5% by abdominal power test and 22% by flat bench group.

Willardson (2007) states that core stability exercises are prescribed based on the phase of training and the health status of the athlete. During pre-season and in-season mesocycles, free weight exercises increase in core strength and power. Similarly, long tension times, small loads, during off-season and postseason mesocycles, Swiss ball exercises involving isometric muscle actions, and increase core endurance.

The core muscle activity during mini stability ball exercise with the abdominal crunches on the swiss ball and on the floor was analyzed by Petrofsky et al., (2007). With the help of EMG recorded on the lower back muscles and over the abdomen the muscle use was tested. More muscle work was used for the exercise approximately 50% of the crunches above the Swiss ball was used when work did on floor. The toughest among the exercises with mini ball is as four times of abdominal crunches per second and the lightest is about only half of the work per second as floor crunches. The maximum difference during mini stability ball exercise was observed when the degree was extended up to a maximum of 90 degrees.

The core stability exercises on and off a Swiss ball was observed by Marshall and Murphy et al., (2005). With the help of EMG measurements, the
muscle activity of 8 healthy volunteers was used during four different core stability exercises for the assessment of lumbopelvic muscle activity. From their observation, it was noticed that swiss ball gives a training stimulus for the rectus abdominus. To minimize rectus abdominus activity, further research on core stability training was required.

Stanton, Reaburn and Humphries (2004) highlighted the outcome of a short-term Swiss ball training on core stability and running economy. Eighteen young male athletes were divided into a control and experimental groups and evaluated before and after the training program for stature, body mass, core stability, electromyographic activity of the abdominal and back muscles, treadmill VO2max, running economy, and running posture. It is found that Swiss ball training may positively affect core stability without improvements in physical performance of young athletes. So that, selection of exercise play vital role in building stability.

Cosio-Lima et al., (2003) studied for five weeks of physioball core stability and balance exercises with conventional floor exercises among women. The two groups performed curl-ups and back extensions on the physioball while the other performed the same on the floor. Baseline and post-training tests included electromyography (EMG) recordings of the rectus abdominus and erector spinae muscles; The physioball group was found to have remarkable greater mean change in EMG flexion and extension activity and greater balance scores (p < 0.01) than the floor exercise group. No significant changes observed as a whole. Early
adaptations in a short-term core exercise program using the physioball resulted in greater gains in previously untrained women when compared to performing exercises on the floor.

Arokoskiet et al., (2001) researched the paraspinal and abdominal muscle activities during various types of therapeutic exercises and to study the capacity of load created by varying limb movements and trunk positions. It is also highly useful to see the effect of muscle activities. The person who was advised to take place was around twenty-four. They were healthy volunteers (14 women, 10 men) aged 21 to 39 years. The Experimental Subjects performed 16 different therapeutic exercises commonly used to treat low back pain. The therapeutic exercises given are simple and too effective in activating both abdominal and paraspinal muscles. It is possible to amplify the trunk muscle activities the limb and trunk position is to be enhanced. Than men, women were better able to activate their stabilizing trunk muscles. To perform the similar activity in much higher degree men need only less strength when compare to women.

Vezina and Hubley-Kozey (2000) analyzed the relative activation amplitudes from 3 abdominal and 2 trunk extensor muscle sites. While the same action was performed by the person of experimental healthy subjects when performs the pelvic tilt, abdominal hollowing, and level 1 of the trunk stability test (TST level 1). Around Twenty-four healthy men (mean age, 30 +/- 8.1 yr [SD]) were selected as participants. From Each 5 muscle sites and the subjects performed 3 exercises in a balanced order, repeating each exercise 5 times while surface
electromyography (EMG) was recorded. Exercises were divided into 2 phases: movement and stabilization. The top activity was recorded from the External Oblique (EO) during the pelvic slant, just more than 25% of MVIC. The only exercise to take on the erector spinal to significantly higher amplitudes than the multidisc site was the TST level 1. The exercises did not recruit the abdominal muscles to plenty level for strengthening for this vigorous taster; however, all 5 muscle sites were activate forming the basis of a stabilizing exercise approach. Study exercises were not transposable for the patterns of trunk muscle activation amplitudes.

**Studies Related to Mobility Training**

Acsinte and Balint (2013) explore the importance of proprioception and neuro-muscular coordination as a part of training sessions. They focused their research on the Handball players and Biathlon athletes. The selected drills has been developed using unstable surfaces devices such as Balance fit, Bossu, Therabands, Foam devices etc. Evaluation of the athletes' performances has been realized using tests from "Functional testing in Human Performance - 139 tests for sport, fitness, and occupational settings" by Michael P. Reiman and Robert C. Manske (Human Kinetics, 2009). For handball players tests has been developed in the sports hall they are training and for the biathlon athletes in their own specific training environment. The protocols to be followed have been detailed in accordance with the coaches and athletes. They consider that the earlier one start
with proprioceptive and neuro-muscular training, the safest and more efficient
sport performances they will have.

Rafaellaet et al., (2012) has made an attempt in analyzing among the older
people, the brunt of stretching and the resistive exercise undergone by them
followed by detraining on their functional status. The total people were brought
into four groups and the total number of persons participated in those groups were
45. The groups were as given below, resistive exercise and stretching (number of
persons were 9 and the age group is 61-71), stretching (number of persons were 10
and the age group is 63-75), control (number of persons were 13 and the age group
is 60-72) and resistive exercise (number of persons were 13 and the age group is
64-74). No exercises were performed by CG. However, detraining is greater than
before systolic blood pressure in the RG as when compared to SG. The RSG, RG
and SG were had warm-up sessions twofold a week for the lower-body stage
exercises. The Diastolic blood pressure has been decreased for about twelve weeks
in the SG and after six weeks in the RSG. The perk up of the status of older people
will be well designed after the six weeks of resistive training or the stretching.
Even though the decrease in the amalgamation stretching and resistive exercise
after six weeks was observed to be decreased, the detraining was found to be
increased SBP when the resistive exercise alone was used.

Stathokostas et al., (2012) interminably viewed the effects of flexibility and
the detailed training intervention on measures of well-designed yield produced in
good physical shape in older adults over the age of 65 years. Five electronic
databases were acknowledged for involvement studies concerning concepts interrelated to aging, flexibility, functional outcomes, and training interventions. After estimate the articles for consequence, 22 studies were painstaking. The results recommended that flexibility-specific interventions influence the range of motion (ROM) outcomes and is unable to get along in sequence on the subject of both the rapport between flexibility interventions and functional outcomes or daily functioning. Due to the extensive assortment of intervention protocols, and the examined body study the significant positive approach on functional ability, require further investigation.

An attempt has been made by Simaoe et al., (2011) in order to identify the flexibility gains and strength after isolated or simultaneous strength and flexibility training after 16 weeks. The outcome of their research showed that, among the adult women the short-term strength training which was provided during research will help in increasing the strength and their flexibility. The strength training provided to them during research will also help them in the maintenance of flexibility among those women without any addition of stretching included during the exercises and also their development. The results also suggested the flexibility and strength can both be prescribed together in order to get an enhanced flexibility improvement in them.

The attenuation induced by the maximal eccentric exercise on muscle damage during the flexibility training has been studied and analyzed extensively by Chen et al., (2011). For this work, thirty young men who are new to this having
untrained were allocated to control group, static stretching and proprioceptive
neuromuscular facilitation. The result obtained by them suggests that the flexible
muscle and the eccentric exercise-induced muscle damages would be effective by
both PNF and SS and also they found that the susceptible damage produced by
them would be negligible.

The resistance training flexibility enhancement among the young and
sedentary population of women were exclusively studied, examined and have been
proved by Santos et al., (2010). The flexibility of those women was assessed based
on six articular movements as mentioned below: trunk flexion and abduction,
horizontal shoulder extension and shoulder flexion and extension and also the
extension in 24 sedentary and young women by differentiating them among three
different groups for checking the flexibility and enhancement of their strength in a
regular period of about eight weeks within twenty four sessions.

An attempt has been made by Sakari et al., (2010) in order to analyze the
musculoskeletal, mobility performance, psychomotor and their stability and
sensory determinants for the existing older population and their results suggested
that the musculoskeletal functions, predictive effects of sensory and psychomotor
on mobility performance among older people has been extended over a period of 5
years in order to prevent the lower extremity ROM, vision, mobility limitations
and reaction were need to be targeted, this is in addition to the balance and muscle
strength.
Kloubec (2010) demonstrated the effectiveness of exercises of upper-body muscular endurance, pilates and on hamstring flexibility, abdominal endurance, posture, and balance. A total of subjects of about fifty were involved for 12-week Pilates class through 1 hour twice a week. Subjects were grouped in to experimental and control group. Subjects underwent the basic mat routine covering approximately 25 exercises focusing on flexibility of the abdomen, low back, and hips and muscular endurance in each session. After the twelve week time, a remarkable improvement of \( \leq 0.05 \) among all the variables except balance and posture was observed through covariance analysis. From this study, the exposure to Pilates exercise for about twelve weeks through 60-minute sessions and twice a week, in active middle-aged men and women, it showed a statistically remarkable increase in upper-body muscular endurance, abdominal endurance and hamstring flexibility. No improvements were observed in either balance or posture compared with the control group. These exercises are very much desirable by the normal public as they relieve physical inactivity issues and are adopted by fitness trainers among the public. From this study, it was found that the individuals can enhance their flexibility and muscular endurance by using relatively low-intensity pilates exercises without any equipment or skill and are easy to learn and practice in a fitness routine of personal being.

Monteiro et al., (2008) subjected sedentary middle-aged women for a ten weeks program of the training of strengthening towards their flexibility. A total of 10 members were assigned randomly for both training of strengthening and
control group. The strengthening training program consisted of seven exercises performed for three circuits of eight to twelve repetitions maximum except the abdominal exercise. Flexibility measurements were made for ten articulation movements in pre and post training and found to increase. Among the movements examined, extension and trunk flexion, hip flexion, shoulder horizontal adduction and extension posed significant increases except knee flexion. No improvement felt for control group. Final conclusion arrived as weight training may enhance flexibility in several sedentary middle-aged women analyzed previously, but not all movements jointly.

McMillian (2006) compared and recommended that the effects of dynamic warm up (DWU) and static-stretching warm up (SWU) for agility and power can be done as a stand-alone activity.

The post training driven performance was compared with the help of two power mobility training protocols have been studied by Hall et al., (2005). From two residential facilities of Canadian Toronto area, 12 users were recruited from power mobility. The training was aimed at making clients aware and comfort and safe in handling power mobility devices. The content of training was same for all the clients present at two sites. The difference was made in the time frame in which sessions conducted and in the number of sessions conducted. The participants differed from each other at two sites from the type of device used, overall driving performance and gender. When the variables were taken into hierarchical regression, the variance in driving performance was accounted as
64%. The insignificance of duration of training and the correlations between device was identified when the facility was controlled.

An attempt has been made by Segal et al., (2004) in assessing the claims regarding the effects of body composition, health status and Pilates training on flexibility and found that the flexibility has been increased efficiently. However, its effects on body health status, posture and composition are more limited and may be its establishment gets more difficult.

Calasky (2001) determined the length of range of motion restriction by athletic tap brands and athletic braces, subjected to standardized moments and recommends that the lace up brace was the most effective range of motion control prophylaxis with implications for preventing ankle sprains and all braces performed better over time. There was no statistical difference between tape brands in reducing ankle range of motions.

The effect of low frequency, eight week and low volume, multi joint movements on the muscular power, flexibility, progressive strength training program emphasizing free weight, supervised, endurance, and strength of women belonging to African and American continent of age group 44 to 68 years has been investigated by Adams et al., (2001). Sedentary American and African women’s of nineteen in number were assigned randomly to a non-exercise control group or a strength training only group. The strength, flexibility, absolute endurance and maximal power were assessed after and before training. The training has been for two days in duration of a week and the methods used were machine exercises and
free weight exercises for about eight to ten repetitions using 2 or 3 sets on both assistance and also primary exercises. This study demonstrates the multi joint movements, progressive strength training emphasizing free weight, low frequency will significantly cause gains in flexibility, strength and absolute endurance in the women’s belonging to the region of America and Africa.

Burke (2000) compared 2 methods of delivering the same proprioceptive neuromuscular facilitation (PNF) flexibility exercise protocol: one manual and the other machine. The machine group had significantly greater increases than the manual group on trunk flexion and right hip flexion. Females had significantly greater improvements than males for trunk flexion. Despite many similarities between the 2 training methods, there were numerous beneficial aspects associated with the use of the flexibility exercise equipment.

**Summary of Review of Related Literature**

The reviews were presented under two sections such as studies related to core strength training and mobility training respectively. In order to have a comprehensive picture and current status of these training, research studies conducted in this area are reviewed. All the research studies were presented in this section produced better results on selected biomotor and psychomotor parameters. The review of literature helped the researcher from the methodological point of view too. It was learnt that most of the research studies cited in this chapter are appropriate methods for developing biomotor and psychomotor skills and sports performance. The present study may serve as a foundation and main ingredient for
future investigation for enhancing the biomotor and psychomotor parameters. The review of literature summarizes that numerous studies have been dealing with the beneficial effect of core strength and mobility training, however, there is scarcity for studies conducted to compare the effect of isolated and parallel core strength and mobility training on biomotor and psychomotor parameters of cricket players.

Mobility training or stretching was used practically by every coach in many different forms, physiotherapist and some athletes on regular basis. This is inform that, during the therapy session or during every training period, it is necessary to keep some form of stretching should take place likely. To understood the fitness components in least manner, mobility training was the probable method suitable and is identified from the scientific knowledge. The outcome of those results suggests the following, the improvement in active ROM and the reduction in the active stiffness were required. Since both the muscular contractions and movement were involved in sports activites, the static stretches which is responsible of reducing the passive tension was more specific. Since to reduce the active stiffness which are based on the studies of training methods are limited, one can follow the methods which are used in the improvement of active range of movement, since they are similar to one another.

Since it is believed that the modern coaching techniques which uses the mobility exercises which are the essential components and these kind of exercises are more helpful and one can get benefit out of it in getting sports performance and they also favour in the sense that they produce less injury. Even though this
has a major beneficial the literature which supports these results are only very few in number. The importance of maintaining fitness among cricket players is well documented and various training modalities have been recommended; however, the effectiveness of core strength and mobility training has not been completely characterized. It is also unclear that whether fitness benefits are limited to core strength and mobility training or its combination are as effective or more effective in the cricketers. The aim of this study was to investigate whether 12 weeks of isolated and parallel core strength and mobility training would induce and sustain improvements in biomotor and psychomotor parameters compared to no exercise control group.

In this chapter, the researcher had given research abstracts, which has been conducted recently and published through magazines, journals and periodicals pertaining to the topic considered in this study. These reviews of related literature helped the researcher for the better understanding of the problem and to interpret the result.
Chapter - III

Methodology....