A study of relevant literature play an important role in getting a full picture of what has been done with regard to the problem under study. Such a review, bring out the foundation upon which all future work will be built.

The research scholar has attempted in this chapter to locate the literature related to this study. The relevant studies from various sources are cited below.

**Gokulakrishnan & Pushparajan (2014)** investigate the effect of Plyometric training alone, Plyometric training parallel with closed kinetic chain resistance training programme on the development of selected physiological variables. Forty five subjects were selected at random and their ages ranged from 17 to 19 years. The subjects were divided into three equal groups. The groups were assigned as Plyometric Training (PT), Plyometric Training Parallel with Closed Kinetic Chain Resistance Training (PTPCKCRT) and Control Group (CG) in an equivalent manner. The result of the study revealed that PT and PTPCKCRT were significantly improved Physiological variables such as systolic blood pressure, diastolic blood pressure and resting heart rate when compared with control group.

**Mangesh & Subramaniam (2014)** conducted study to examined the effect isolated and combined effect of aerobic and Pilates exercise on selected motor fitness components and physiological variables among adolescent boys. Sixty adolescent
school boys were selected as subjects at random. Their age ranged from 14 to 17 years. The subject was divided in three experimental groups and one control group, each group consists of 15 subjects. Experimental group-I underwent aerobic exercise, Experimental group-II undergone Pilates exercise, Experimental group-III Combined exercise for the period of twelve weeks. The control group-IV did not participate any specific training programmed other than their regular physical activity programme as per their physical activities programme as per their curriculum. The result of the study revealed that experimental group had achieved a significant improvement on flexibility and resting pulse when compared to the control group.

Nageswaran (2014) conducted study to examine the impact of yogic practices and weight training on breath holding time of college men players. Forty five men were selected as subject at random and they were divided randomly into three groups of fifteen each, group-I underwent Yogic Practices, group-II underwent Weight training and group-III acted as Control. The training period was limited to twelve weeks. The result of the study indicated significant improvement due to the impact of yogic practice and weight training on breath holding time and also showed significant difference among the groups.

Ramin Aghajani et al., (2014) examined the effects of Plyometric and resistance training on the explosive power and strength of young male volleyball players. 45 volleyball players, 15-22 years old, which were randomly divided into three groups: two training groups and one control group. Among the two training
groups, one was engaged in Plyometric and the other in resistance exercise training (six weeks, two times per week). The control group was doing its common volleyball training. After a six weeks of training, the result of the study revealed that there were significant differences between the average of explosive power and strength in both groups of Plyometric and resistance training in comparison to control group.

**Sharada (2014)** conducted study to analyze the effect of specific weight training programme on the performance of skill ability of volleyball players. Sixty male volleyball players were selected as subject for the purpose of the study. The age of the subjects ranged between 15 to 24 years. Sixty male volleyball players were divided into two equated groups on the basis of pre-test. These two equated groups were randomly named as experimental groups "A" and control group 'B'. Experimental groups undergone weight training programme for a period of twelve week where as the subject of control group adopted regular activities programme. The result of the study revealed significant improvement on performance of skill ability of the volley ball player.

**Vijayalakshmi & Jayabal (2014)** investigated the effects of two different training protocols – (i) own body resistance exercises and Plyometric training, and (ii) own body resistance exercises and Plyometric training with yogic practices on different parameters such as cardio-respiratory endurance, systolic and diastolic blood pressure and breath holding time. Sixty adolescent school boys were divided
into 3 groups, group-I as own body resistance exercises and Plyometric training group (n=20), group-II as own body resistance exercises and Plyometric training with yogic practices group (n=20) and group III as control group (n=20). The twelve weeks training period was given. The result of the study showed that all the trainings elicited significant (p<0.05) improvement in all the tested variables such as cardio respiratory endurance, systolic and diastolic blood pressure and breath holding capacity when compared with control group.

**Annadurai & Rajaram (2013)** Conducted study to investigate the effect of Combination of Squat and Plyometric training Program on the Development of Power Production and Skill Performance of Inter Collegiate Men Volleyball Players. Thirty (N=30) inter collegiate men volleyball players were selected their age ranged from 18 to 25 years. They were divided into two groups (n=15). Group-I Combination of Squat and Plyometric training (CSQPT) and Group - II control group (CG). The training period was six weeks. The result of the study revealed that the combination of squat and Plyometric training significantly improved Spike jump, block jump and serving ability of Volley ball players.

**Bobby & Arumugam (2013)** conducted a study to find out the effect of stair case training and Plyometric training on selected skill performance variables among college level volleyball men players. Thirty volleyball players were selected as subjects from various colleges and their age was between 18 -22 years. The subjects were categorized into three groups named stair case training, Plyometric training and
control group. Treatment was given twelve weeks three days a week and a session on each day. The control group did not participate in any of the training programme. The result of the study revealed that volleyball service ability and attack ability was significantly improved when compared with control group.

David Nelaturi and Paul Kumar (2013) examined the effect of Isolated and combined Training of weight and Plyometric training on selected Physical and Physiological Variables among College Men. Eighty college men were chosen, their age ranged from 18-23 years. Group-A underwent weight training, Group-B underwent Plyometric training, and Group-C underwent combined Plyometric and weight training and Group-D act as control group. Training programme given three days for every week for 12 weeks. The result of the study revealed that experimental group significantly improved the selected physical and physiological variables when compare with control group.

Erkal Arslanoglu & Senel (2013) evaluated the effects of 8 weeks regular Pilates mat work exercises on the physiological parameters and cardiovascular risk factors of sedentary middle aged women. 20 healthy middle aged sedentary women (experimental=10 and control=10) voluntarily participated in this study. The result of the study revealed that experimental group flexibility, hand-grip, sit-up scores and back strength significantly increased at the end of the Pilates intervention, where as resting pulse rate, systolic BP and High-Density Lipoprotein (HDL) decreased (p<0.05).
Eugenia Gortsila et al., (2013) investigated the impact of volleyball training at changing the general and specific motor abilities at female volleyball players 13-14 years old. The sample represented 40 subjects, students at volleyball. In this study, the sample of variables is divided into two sub-samples (variable assessment of general motor skills and variables to assess specific skills in volleyball). The result of the study reveals that the long jump seats (SUD), easy to block (DUB), running at 20 m (TRC), (Russell Lang-test - fingers (RLTP), Russell Lang-test - “hammer” (RLTC) and service (RLTS) were significantly improved after the three month of training period.

Gortsila et al., (2013) investigate the effect of different training surfaces (hard or sand surface) on agility and passing skills of prepubescent female volleyball players. 45 prepubescent girls (age: 11.1 ± 0.5 years) participated in this study and were separated in three groups. Group S (N=15) and I (N=15) consisted of volleyball players, while group C (N=15) consisted of girls that had no volleyball training experience. All groups participated in a 10-week (3 days/week) volleyball training program that included technical and passing skills exercises. The result of the study reveals that the Agility T-test and 505-test were significantly (p<0.001) improved in all three groups after the 10-week training program. Agility improvement of group S was significantly (p<0.001) greater than the other two groups (I and C), regardless of the surface (hard or sand) that the test was executed. Group S achieved greater improvements than the other two groups in passing skills too. All three groups were
significantly (p<0.001) improved in overhead and forearm passing accuracy after the 10-week training period, but it was group S that achieved the greatest improvement, regardless of the (hard or sand) that the test was executed.

Jay et al., (2013) conducted study to investigate the effectiveness of a work site intervention using Kettlebell training to improve postural reactions to perturbation and jump performance. This single-blind randomized controlled trial involved 40 adults (n=40) from occupations with a high prevalence of musculo skeletal pain and discomfort (mean age 44 years, body mass index 23 kgm, 85% women). Participants were randomly assigned to a training group-doing Kettlebell swings 3 times a week for 8 weeks-or to a control group. The result of the study reveals that the Kettlebell training significantly improves postural reactions to sudden perturbation.

Kamaraj et al., (2013) investigated the impact of aquatic based Plyometric training on selected skill related motor fitness components namely agility, coordination, power and speed among male handball players. Thirty male handball players have been randomly selected their age of subjects were ranged from 18 to 25 years. The experimental group participated in the aquatic based Plyometric training for 3 days a week, one session per day and for 8 weeks each session lasted 45 minutes. The control group maintained their daily routine activities and no special training was given. The results of the study showed that there was significant differences exist between aquatic based Plyometric training group and control group.
And also aquatic based Plyometric training group showed significant improvement on agility, coordination, power, speed and performance compared to control group.

**Marinda et al. (2013)** conducted study to determine the effects of mat Pilates on resting heart rate, resting blood pressure and fasting blood glucose, cholesterol and triglycerides in elderly women. Fifty sedentary, apparently healthy females aged 60 were randomly assigned into a control (CG, n=25) or an intervention (IG, n=25) group. The IG took part in an eight-week progressive mat Pilates exercise program, three times weekly while the CG did not take part in any structured exercises throughout the eight-week period. The result of the study revealed eight-week mat Pilates program, the IG significantly (p ≤ 0.05) improved resting heart rate, Resting blood pressure, Fasting blood glucose, Cholesterol, Triglycerides, Elderly women

**Natarajan (2013)** examine the effect of isolated and combined Swiss ball and flexibility training on selected biochemical and skill performance variables among school volleyball players. Forty male volleyball were randomly selected as subjects and their age ranged from 16 to 18 years. The selected subjects were divided into four groups of ten subjects each. Group-I underwent Swiss ball training, group-II underwent flexibility training, group-III underwent combined Swiss ball and flexibility training, and group-IV acted as control. After the respective training for a period of twelve weeks (post-test). The result of the study reveals that combined Swiss ball and flexibility training was significantly better than isolated Swiss ball
training and flexibility training in altering selected biochemical and skill performance variables of the school volleyball players.

**Palanisamy (2013)** investigated the effects of power training with varied intensity on selected motor fitness variables among college men volleyball players. The study was conducted on thirty men volleyball players were randomly selected as subjects. Then they were randomly assigned equally into three groups. Group - I underwent low intensity power Training Group (n=10), Group -II underwent high intensity power training Group (n=10) and Group–III acted as control Group (n=10). The experimental groups were subjected to the training for three days in a week for a period of 6 weeks. It result of the study reveals that there was a significant improvement in motor fitness variables such agility, broad jump and shuttle run due to the effects of low intensity power training and high intensity power training.

**Rajkumar Sharma & Chaubey (2013)** investigated study was to determine the effect of sand training on jumping abilities of junior volleyball players. Thirty junior volleyball players, age ranging from 16 to 19 years, were selected as the subjects of the study. Subjects were divided randomly in two equal groups Group-A went for a program selected for sand training for a period of 6 weeks and group 'B' was the control group. The analysis of data revealed that the six-weeks and training program had significantly increase in the explosive type strength of the leg muscles, which in turn leads to an increase in the vertical jump of a block, spike and the long jump of experimental group.
Sathianarayanamoorthi (2013) examined the impact of game-specific field training with and without mental practice strategies on selected physiological and performance variables namely resting heart rate, systolic blood pressure, diastolic blood pressure and Volleyball playing ability among male volleyball players. Thirty six male volleyball players have been randomly selected and their age of subjects was ranged from 17 to 23 years. The subjects were randomly assigned into three groups of 12 each, such as experimental and control groups. Group-I underwent Game-specific field training, Group-II underwent game-specific field training with mental practice strategies for 5 days a week, two sessions (morning & evening) per day and for 12 weeks, each session lasted 90 minutes. The control group maintained their daily routine activities and no special training was given. The results of the study showed that there were significant level differences exist. Among game-specific field training group, game-specific field training with mental practice strategies group and control group on selected variables such as resting heart rate, systolic blood pressure and diastolic blood pressure level and improvement in the Volleyball playing ability.

Shivaji et al., (2013) evaluated the effect of Speed, Agility, and Quickness (S.A.Q.) training programme on selected skill performance variables of Junior Volleyball players. Thirty junior volleyball players were randomly selected as subjects. They were divided into two equal groups. Each group consists of 15 subjects. The age of subjects were ranged from 12-14 years. The findings of the
study indicates that 12 weeks of S.A.Q. Training have significant effect on selected skill performance variables i.e., serving and passing Ability of junior volleyball players.

Ashok et al., (2012) evaluated the effect of combination of Plyometric training and skill training on the development of jumping ability, anaerobic capacity and skill performance of Male volleyball players, sixty male volleyball players (18-25 yrs) were selected from various colleges. The subjects were divided as the Experimental group-1 (n=20, PLYOSKILL group) performed the Plyometric and skill training, Experimental group-2 (n=20; SKILL group) performed the Skill Training alone, Experimental group-3 (n=20, CONTROL group) did not perform any training. After 12 week of training programme the physical variables and playing ability were significantly improved at (P<=0.05 level). The post-test values of jumping ability, anaerobic capacity and game playing ability were 16.4 ± 59, 818.2 ± 44.2, 6.7 ± .55 for PLYOSKILL group, 15.02 ± 0.59, 800.2 ± 28.25, 6.0 ± 0.72 for skill group and 14.22 ± 0.73, 775.80 ± 49.47, 4.75 ± 0.638 for control group respectively. Thus the study shows that combination of Plyometric training and skill training was significantly developed jumping ability, anaerobic capacity and skill performance variables among male volleyball players.

Fourie et al., (2012) conducted study to determine the effects of mat Pilates on muscular strength and endurance in elderly women (aged > 60 years). Fifty sedentary, apparently healthy females aged 60 and older were randomly assigned into
a control (CG, n=25) or an intervention (IG, n=25) group. The results of the study indicate that eight-weeks of mat Pilates produced significant (p ≤ 0.05) improvements in upper-body muscular strength (19.12 ± 5.13 repetitions (reps) - 27.84 ± 5.68 reps; p = 0.000), lower-body muscular strength (13.24 ± 3.23 reps - 7.52 ± 3.81 reps; p = 0.000) and muscular endurance (24.48 ± 11.62 reps to 44.16 ± 18.97 reps; p = 0.000).

Grieco et al., (2012) investigated the effect of a 10-week combined resistance-Plyometric training program on the RE and V [Combining Dot Above] O₂ max in female soccer players. Fifteen Division 1 A female soccer players (age 19.0 ± 0.7 years; height 1.67 ± 0.1 m; weight 61.7 ± 8.1 kg) performed a treadmill test for V [Combining Dot Above] O₂ max and RE at the end of a competitive season (PRE) and after a 10-week training program (POST). The result of the study revealed that a significant increase occurred after training in the V [Combining Dot Above] O₂ peak (10.5%; p = 0.008), time to fatigue (6.9%; p = 0.017). Interpolated maximal speed (3.6%; p = 0.016), despite there being a decrease in the maximal respiratory exchange ratio (2.9%; p = 0.001). There was no significant change in the RE at 9 km/h; however, there was a significant decrease in the percentage of the V [Combining Dot Above] O₂ peak at 9 km/h (-5.6%; p = 0.02).

Haghighi et al., (2012) investigate the effect of Plyometric versus resistance training (PT vs. RT) on sprint and skill performance in young soccer players. Thirty elite soccer players participated in this study as the subject. The subjects were randomly assigned to PT group (n=10, age: 19.1 ± 1.7 years), RT group (n=10, age:
18.0± 0.81) or control group (n=10, age: 18.8 ± 1.5 years). The results of the study reveals that the time of sprint running test and dribbling improve after PT and RT (P<0.05). For accuracy of shooting no significant change was observed after 8 weeks PT and RT.

**Jae-Ho Yu & Chang Lee (2012)** conducted a study to investigated the effect of core stability training using pilates for 8 weeks on lower extremity muscle strength and postural stability. 40 healthy people who were randomly allocated to 1 of 2 groups: a core stability training group (CST) (n=20) and a control group (n=20). The CST group received three 60-minute pilates training sessions per week for 8 weeks, whereas the control group did not undergo any training. The results of the study indicate that pilates core stability training enhances motor performance skills by increasing lower extremity muscle strength and improving postural stability and can prevent musculoskeletal disorders and improve quality of life.

**Jenzer Vino & Kumaresan (2012)** investigated the influence of Plyometric training on breath holding time of volleyball players. Thirty men volleyball players were selected as subjects at random. The selected subjects were divided into two groups of fifteen each. Group-I underwent Plyometric training, Group-II acted as control group who did not participate in any other training other than their regular routine. The age of the subjects ranged from 17 to 22 years. During the training period, the experimental groups underwent their respective training programme in addition to their regular programme of the course of study. The duration of training
period twelve weeks. The result of the study revealed that the Plyometric training group significantly improved the physiological variable breath holding time of volleyball players.

Mangel & Abhilash (2012) investigated a study to determine the effects of yogasanas and pilates exercises training on physical status variables including flexibility and Cardiovascular Endurance. Forty five randomly selected male students aged 18–24 years, volunteered to participate in the study. Subjects were assigned into three groups: I (experimental A: N-15), II (experimental B: N-15) and III (control: N-15). The subjects from Group I and II were subjected to 12-weeks yoga and pilates training programme. The results of the study indicated that flexibility and Cardiovascular Endurance variables including (p<0.05) significantly improved in group I and II compared with the control group. There was non-significant difference was found between two experimental groups for flexibility and cardiovascular endurance.

Mutlu Cug et al., (2012) conducted a study to examine training adaptations associated with a 10-week instability-training program. Forty-three participants participated in either a 10-week (3 days per week) instability-training program using Swiss balls and body weight as resistance or a control group (n=17). The result of the study explored that the trained group underwent an instability-training program using Swiss balls with body weight as resistance significantly improved in joint proprioception and core strength.
Ozar Kaya et al., (2012) investigated the effects of 6 mo of Pilates and calisthenics on multi joint coordination and proprioception of the lower limbs at the 3rd and 6th mo of training. Healthy, sedentary, female participants age 25-50 y were recruited and randomly divided into 3 groups: a calisthenic exercise group (n=34, mean age ± SD 40 ± 8 y, body-mass index [BMI] 31.04 ± 4.83 kg/m²). A Pilates exercise group (n=32, mean age ± SD 37 ± 8 y, BMI 31.04 ± 4.83 kg/m²), and a control group (n=41, mean age ± SD 41 ± 7 y, BMI 27.09 ± 4.77 kg/m²). The calisthenics and Pilates groups underwent related training programs for 6 mo, while the controls had no specific training. The result of the study shows that the calisthenic exercises are more likely to improve coordination of the lower extremity after 3 and 6 mo of training than Pilate’s exercises. Calisthenic exercises may be useful for individuals who require improved coordination.

Subramaniam et al., (2012) conducted study to analyze the effect of isolated and combined weight and Plyometric training on strength and explosive power. The investigator has selected 80 college students at random, their age ranged from 18-25 years. The selected subject were divided into Weight training group, Polymeric training group, Combined weight and Plyometric trainings group and control group were restricted to Participate in any activities. The training was given for the period of twelve weeks. The data were collected before and after the training. The result of the study showed that there was a significant improvement in muscular strength and explosive power due to the influence of training programmed.
**Vassil & Bazanov (2012)** conducted study to find out the efficiency of composed Plyometric training program on youth volleyball players force capabilities in their usual training period. The Plyometric training program was applied during 16 week period where was attended twenty-one 12-19 years old youth volleyball players. The results of the study shown that athlete’s legs and arms speed force significantly improved.

**Wang et al., (2012)** examined the effects of 8-week Pilates training program on Limits Of Stability (LOS) and abdominal muscle strength in young dancers. Twenty-four female volunteered and randomly assigned as Experimental Group (EG) or Control Group (CG). All subjects received the same dance lessons but the EG underwent an extra Pilates mat exercises for 40 minutes, three times a week, for 8 weeks. The results of the study showed that the overall LOS scores at levels 2/8 and the 30/60 seconds abdominal strength for the EG group pre- and post-training were changed from 22/38% to 31/51% and 20/33 times to 24/42 times, respectively. Hence the study concluded that 8-week Pilates training can improve the LOS performance and abdominal strength in young dancers.

**Manju and Kanchan (2011)** conducted study to examine the effect of Plyometric training and the ability to reinforce the arm and leg strength in Basket ball and volley ball players. Plyometric refers to Exercise that enables a muscle to reach maximum force in the shortest possible time. The muscle is loaded with an eccentric to concentric action. A total of Basket Ball 20 and 20 Volleyball players aged 18-22
years selected by cluster sampling from three colleges which participated in Inter Colleges served as subjects. The study was carried out for 5 weeks. The result of the study revealed significant improvement in arm and leg strength of male Basket Ball players than Volleyball male players.

**Ozer et al., (2011)** investigated the effects of a 12-week “rope jumping” and “weighted rope jumping” training programs on functional parameters including multi-joint coordination and proprioception, strength, endurance in adolescent female volleyball players. Weighted Rope Training group (N=9; 15 ± 1 years), Rope Training group (N=9; 14.1 ± 1.3 years) and Controls (N=7; 14.4 ± 1.3 years). The result of the study reveals that the adding rope jump to training programs improves joint repositioning and coordination. Weighted Rope Training group got greater gains for coordination and eccentric endurance parameters for lower extremities in a closed kinetic chain.

**Sureeporn Phrompaet et al., (2011)** Investigated a study to assess and compare the effects of Pilates exercise on flexibility and lumbo-pelvic movement control between the Pilates training and control groups. Forty healthy male and female volunteers (mean age 31.65, 6.21 years) were randomly divided into Pilates-based training (20 subjects) and the control groups (20 subjects). The Pilates group attended 45-minute training sessions, 2 times per week, for a period of 8 weeks. The result of the study showed that the Pilates training group improved flexibility significantly (p<0.001) during time intervals. This effect was also significantly
greater than the control group for both 4 weeks and 8 weeks of the training period (p<0.001).

**Tania Patricia Amorim et al., (2011)** conducted study was to assess the effects of a Pilates training program on muscular strength and flexibility in dance students. Fifteen dance students were divided into 2 groups: experimental (n=7) and control (n=8). The result of the study showed that the experimental group showed significant positive differences (p≤0.05) in muscular strength and flexibility measurements between groups after the training program.

**Vijayalakshmi & Jayabal (2011)** investigated the effects of combination of own body resistance exercises and Plyometrics with and without yogic practices on selected physical and physiological variables among adolescent boys. Sixty adolescent boys ranging between 13 and 18 years were selected and divided into three equal groups and they were trained for twelve weeks. Prior and after the training for the subject’s pre-test and post-test was conducted on agility, flexibility and resting pulse rate. The result showed that the experimental groups showed remarkable increases in the agility, flexibility and resting pulse rate than the control group.

**Kamalakkannan et al., (2010)** examined the effect of aquatic training with and without weight on selected physiological variables among volleyball players. Sixty volleyball players are selected as subjects and their age ranged between 18 and 20 years. The subjects are categorized into three groups randomly into Control group
(CG), Aquatic Training with Weight Group (ATWG), Aquatic Training Without Weight Group (ATWOG) and each group comprises of 20 subjects. The result of the study revealed that Breath holding time, resting pulsate significantly improved due to the ATWG and ATWOG.

Khalifa et al., (2010) investigated the effect of a standard Plyometric training protocol with or without added load in improving vertical jumping ability in male basketball players. Twenty-seven players were randomly assigned to 3 groups: a control group (no Plyometric training), Plyometric training group (PG), and Loaded plyometric Group (LPG, weighted vests 10-11% body mass). Before and after the 10-week training program, all the players were tested for the 5-jump test (5JT), the squat jump (SJ), and the Counter Movement Jump (CMJ). The PG and LPG groups performed 2 and 3 training sessions per week, during the first 3 and the last 7 weeks, respectively. The results of the study showed that SJ, CMJ, and 5JT were significantly improved only in the PG and LPG groups.

Sakti Ranjan Mishra (2010) examined the effects of 10 weeks Plyometric training programme on Selected Physiological Variables on adolescent students. The selected subject divided into two groups experimental group and control group. After the twelve week of training the result of the study indicated that the Ployometric training programme have significant improvement on resting pulse rate when compared with control group.
**Samir Lotfy El-Sayed et al., (2010)** conducted a study to identify the impact of Pilate’s exercises on the muscular ability and components of jump on Volleyball Players. The experimental approach was applied on a sample of 20 players. Their ages ranged between 18 and 20. The result of the study reveals that the improvement in muscular ability level of legs in the posterior measurement than the prior one by 12.04%. Also, there is an improvement in jump components. The improvement percentage of the jump height was by 12.58%. As of the flying time, it was 7.86%. As for the power, there was a decrease in level by -11.71%. Contact time decreased in the prior measurement by -5.50% than the posterior one. As for biological capacity variable, there was an improvement estimated by 12.86% in posterior measurement than prior one. There was an improvement in attack performance by 10.06% and it was 20.94% in the block.

**Soundara Rajan & Pushparajan (2010)** conducted a study to investigate the effect of Plyometric training on development of the vertical jump of volleyball players. The study consisted of 30 male volleyball players, their age ranged from 18 to 25 years. Participants were randomly assigned Group I underwent Plyometric training group and Group II control group. The Plyometric training group carried out a set of Plyometric exercises for twice a week for six weeks. The control group was allowed to play their game, but they were not given any treatments. The result of the study reveals that experimental group had significant difference in the increase of the vertical jump in comparison to the control group.
**Emery et al., (2009)** investigated a study to determine the effect of a Pilates training program on arm-trunk posture, strength, flexibility and biomechanical patterns during a functional shoulder flexion task. Nineteen subjects (9 controls, 10 experimental) were assessed twice, 12 weeks apart, during which the experimental group was submitted to a Pilates training program (two 1-h sessions per week). The result of the study reveals that the Pilates training program was effective in improving abdominal strength and upper spine posture as well as in stabilizing core posture as shoulder flexion movements were performed and also study support that the use of Pilates in the prevention of neck-shoulder disorders.

**Kim Emery et al., (2009)** examined the effect of a Pilates training program on arm–trunk posture, strength, flexibility and biomechanical patterns during a functional shoulder flexion task. Nineteen subjects (9 controls, 10 experimental) were assessed twice, 12 weeks apart, during which the experimental group was submitted to a Pilates training program (two 1-h sessions per week). After the completion of training programme. The result of the study revealed that the Pilates training program was effective in improving abdominal strength and upper spine posture as well as in stabilizing core posture as shoulder flexion movements were performed. Since deficits in these functional aspects have previously been associated with symptoms in the neck–shoulder.

**Miklic et al., (2008)** conducted a study to determine the effects of Plyometric training on the explosive strength of cadet volleyball players. Six-week Plyometric
training program during the second half of the preliminary period of the annual training cycle. The sample consisted of 46 subjects aged 16 (± 6 months). The experimental group consisted of 23 volleyball players, with an average height of 186.35 ± 8.52 and average weight of 70.57 ± 8.98. The control group consisted of 23 high school students, with an average height of 177.35 ± 4.80 and body weight of 68.91 ± 6.48, who had not been exposed to the Plyometric method as part of their physical education classes. The result of the study reveals that the explosive leg strength of two-foot takeoff block jump, the right foot takeoff block jump, the left foot takeoff block jump, the two-foot takeoff spike jump. The right foot takeoff spike jump, the left foot takeoff spike jump, the standing depth jump and the standing triple jump significantly improved experimental group when compared with control group.

Neil Wolkodoff et al. (2008) investigated the effects of a combined Pilates and aerobic program, using a reformer equipped with a trampoline “rebounder” on various fitness variables. 14 subjects, (2 male, 12 female), underwent physiological testing for VO₂ peak, body composition, balance, isokinetic strength, flexibility, and posture. A control group of 6 subjects (1 male, 5 female) underwent testing without any exercise intervention. After the 8-week program result of the study indicated that VO₂ peak, body composition, balance, isokinetic strength, flexibility, and posture significantly improved due to the experimental treatment.

Faigenbaum et al., (2007) conducted a study to investigate the effects of a six week training period of combined Plyometric and resistance training (PRT, n=13) or
resistance training alone (RT, n=14) on fitness performance in boys (12-15 yr). The RT group performed static stretching exercises followed by resistance training whereas the PRT group performed Plyometric exercises followed by the same resistance training program. The result of the study explored that the PRT group made significantly (p < 0.05) greater improvements than RT in long jump (10.8 cm vs. 2.2 cm), medicine ball toss (39.1 cm vs. 17.7 cm) and pro agility shuttle run time (-0.23 sec vs. -0.02 sec) following training.

Flavia et al., (2007) examined the effect in the flexibility by a program of Pilates in a sub-20 futsal team. Divided the athletes group in Pilates group (GP, n=6) and control group (GC, n=5). It was opted to evaluate the flexibility of athletes with two methods (Fleximeter and Wells’s bench). The training program given three times per week with approximately 25 minutes, during four weeks. The results of the study prove that the training protocol with the Pilates exercise increase the flexibility of sub-20 futsal athletes.

Markovic et al., (2007) conducted study to evaluate the effects of sprint training on muscle function and dynamic athletic performance and to compare them with the training effects induced by standard Plyometric training. Male physical education students were assigned randomly to 1 of 3 groups: sprint group (SG; n=30), Plyometric group (PG; n=30), or control group (CG; n=33). After the ten week of training the result of the study reveals that the both SG and PG significantly improved drop jump performance (15.6 and 14.2%), SJ and CMJ height
whereas the respective effect sizes (ES) were moderate to high and ranged between 0.4 and 1.1. In addition, SG also improved isometric squat strength (10%; ES = 0.4) and SJ and CMJ power (4%; ES = 0.4, and 7%; ES = 0.4), as well as sprint (3.1%; ES = 0.9) and agility (4.3%; ES = 1.1) performance.

**Sekendiza (2007)** Conducted a study to examine the effects of Pilates exercise on abdominal and lower back strength, abdominal muscular endurance and posterior trunk flexibility of sedentary adult females. The body fat and body mass index (BMI) pre- and post-data were also assessed as secondary outcomes. The result of the study reveals that there was a positive effect of Modern Pilates mat exercises on abdominal and lower back muscular strength. Abdominal muscular endurance and posterior trunk flexibility in sedentary adult females regardless of the fact that the body weight and fat percentages did not differ significantly.

**Lee & Rachel (2005)** evaluated the influence of Pilates training on the ability to contract the transversus abdominis muscle in asymptomatic individuals thirty-six asymptomatic females were examined. Twelve formed the Pilates trained group, 12 the abdominal curl group (both attending a minimum of 25 classes in 6 months) and 12 were non-training controls. A Pressure Biofeedback Unit (PBU) was used to assess performance of the TrA muscle during an abdominal hollowing activity (TrA isolation test) and under limb load (Lumbo-pelvic stability test). The percentage of subjects passing the TrA isolation test was 10 subjects (83%) from the Pilates group,
four subjects (33%) from the abdominal curl group, and three subjects (25%) from the control group. The percentage of subjects passing the lumbo-pelvic stability test was five subjects (42%) from the Pilates group, all the subjects from both the abdominal curl and control groups failed the test. The result of the study indicate that Pilates trained subjects could contract the TrA and maintain better lumbo-pelvic control than do those who perform regular abdominal curl exercises, or no abdominal muscle exercises.

Segal et al., (2004) conducted a study to assess the effects of Pilates training on flexibility, body composition, and health status. A sample of 47 adults (45 women, 2 men) selected for Pilates training. Thirty-two of 47 enrolled subjects met the protocol requirements of missing no more than 1 weekly 1-hour session Pilates mat class during each 2-month period. The result of the study reveals that the Pilates training result in significant improvement in flexibility.

Malatesta et al., (2003) investigated the influence of a 4-week electromyostimulation (EMS) training program on the vertical jump performance of 12 volleyball players. EMS sessions were incorporated into volleyball sessions 3 times weekly. The result of the study reveals that the ten days after the end of EMS training, the jumping height significantly (p <0.05) increased compared with baseline also for single jumps (SJ +6.5%, CMJ +5.4%). EMS enables the central nervous system to optimize the control to neuromuscular properties.
**Kati et al., (2002)** investigated the effects of six-month athletic training on improving motor abilities in 7-year-old schoolgirls were assessed. Analysis of the results of 12 motor tests showed significant improvement in the study group (n=38) in comparison with control group (n=140) subjected to conventional physical education classes only. The improvement referred to the variables of aerobic endurance (3-min run), flexibility (forward bow), explosive strength (ball throwing and 20-m run), keeping balance (bench standing), static strength (bent arm hang), and repetitive strength (sit-ups). The varimax factor and discriminative function correlations indicated that all four factors of changes contributed significantly to the explanation of discriminative function. An almost equally high correlation of varimax factors and discriminative function was obtained on the basis of differences in the third factor responsible for changes in the frequency of movements and in the explosive strength of the jump type. In the second factor responsible for changes in coordination with changes in the repetitive strength of the body; and in the fourth factor responsible for changes in the explosive strength of the throw and sprint types with changes and endurance.

**Maffiuletti et al., (2002)** investigated the influence of a 4-wk combined electromyostimulation (EMS) and Plyometric training program on the vertical jump performance of 10 volleyball players. Training sessions were carried out three times weekly. After the 4-wk training program the result of the study reveals that the different vertical jumps significantly higher compared to pre-training (< 0.001), and
relative gains were comprised between 8-10% (spike-counter movement jump) and 21% (squat jump). EMS combined with Plyometric training has proven useful for the improvement of vertical jump ability in volleyball players.