CHAPTER – V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 SUMMARY

As the amount of exercise required to maintain and improve health is not utilized by a majority of the population, there is a need to find exercise modalities which provide a blend of aerobic, strength and to make a physiological difference while providing a mode of exercise that appears easy to perform by the general public. Exercise that combines multiple benefits is especially appealing to time conscious potential exercisers.

Pilates has become a world-wide exercise modality which enjoys wide acceptance because of a wide array of ascribed benefits including improved strength, mobility, endurance, flexibility, core stability, proprioception, body control and even a "mind-body" effect in different gravitational planes. The two most common Pilates applications are the reformer and mat-based exercises. Pilates has had acceptance and usage in the dance community, and has been proposed as a rehabilitation and training method.

Pilates training is intended to improve general body flexibility and health by emphasizing "core" (truncal) strength, posture, and coordination of breathing with movement. Joseph Pilates noted that mobilizing early in rehabilitation, resulted in a reduced convalescence period after musculoskeletal injuries. Advocates report that the exercises can be adapted to provide either gentle strength training for rehabilitation or challenge skilled athletes with a vigorous workout. Stott Pilate altered Pilate's original program by incorporating more preparatory exercises and modifications in hopes of

improving safety and maintaining neutral spine position. Pilate exercises are designed to put participants in a position that minimizes unnecessary muscle recruitment, which could potentially lead to early fatigue, decreased stability, and impaired recovery. Pilates training, focusing on back extensors and the abdominal musculature, in particular the transverses abdominus is referred as core strengthening.

Plyometric consists of a rapid strengthening of a muscle in eccentric action immediately followed by concentric action of the same muscle and connective tissues. The stored elastic energy within the muscle is used to produce more force that can be provided by a concentric action alone.

Plyometric training is a method of developing explosive power, and ultimately improving athletic performance. Plyometric exercise includes jumps, hops, skips, bands and throws. Plyometric is used for the lower body, upper body and core to enhance speed of movement in more specific skills. Plyometric training helps athletes learn greater balance, co-ordination, quickness, agility, speed and power.

Many research studies have been carried out only on the individual effect of plyometric training or pilates training. Hence, the investigator has made an attempt to study the effects of pilates training and plyometric training on motor fitness, physiological and psychological variables of college men.

To fulfill the purpose of the study, 120 college men were randomly selected from Dharamanagar Government Degree College in Tripura. Their age ranged from 18 to 21 years. They were divided into four equal groups consisting of 30 each (N = 30). The

group I was considered as Pilates Training group (PilTG), Group II was considered as plyometric training group (PlyTG) and group III was considered as combination of pilates training and plyometric training (CPPTG), Group IV was considered as control group (CG) and not exposed to any treatment. The experimental groups who undergone their respective training programmes for 6 days per week for a period of 12 weeks.

The following dependent variables were assessed by using standard tests.

Motor fitness Variables

Speed was measured by 50 mts dash and the unit of measurement was in seconds.

Agility was measured by 4×10 mts shuttle run and the unit of measurement was in seconds.

Flexibility was measured by Sit and reach test and the unit of measurement was in centimeters.

Muscular strength endurance was measured by modified sit-ups and the unit of measurement was in numbers.

Physiological Variables

Resting pulse rate was measured by biomonitor and the unit of measurement was in beats/min.

Vo_2 max was measured by queens college 3 minutes step test and the unit of measurement was in ml/kg/min.

Anaerobic power was measured by Malkarita Kalamen test and the unit of measurement was in Kilogram/meter/seconds.

Breath holding time was measured by control pause test and the unit of measurement was in seconds.

Psychological Variables

Stress was measured by Perceived Stress Scale (**Cohen, 1983**) and the unit of measurement was in Numbers.

Anxiety was measured by Beck Anxiety Inventory (**Beck, 1990**) and the unit of measurement was in Numbers.

Aggression was measured by Questionnaire by **Buss & Perry (1992)** and the unit of measurement was in Numbers.

Mood state was measured by Brunel Mood Scale (**Terry *et.al,* 2003**) and the unit of measurement was in Numbers.

The experimental groups who undergone their respective training programmes for 6 days per week for a period of 12 weeks. In each training session, the training was imparted for a period between 45 and 50 minutes, which included 5 minutes warming up and 5 minutes relaxation procedure after the training programme for six days per week for a period of 12 weeks.

Descriptive statistics such as mean and standard deviation were found in order to get basic idea of the data distribution. T- test was done for finding whether there is any statistically significant pre-test to post-test mean differences in their respective variables of

each group. ANCOVA test was done to find out the significance of 'adjusted post-test mean' differences between the experimental and control groups for each variables. Whenever the 'F' ratios were found to be significant, Scheffe's post hoc test was applied to test the significant difference between the paired and the adjusted means. In all these statistical tests, level of significance was chosen at 0.05 level of confidence. It was considered as sufficient for the present study. All statistical analysis was carried out with the help of statistical package SPSS for Windows.

5.2. CONCLUSIONS

Based on the results of the study, the following conclusions have been arrived.

1) Within the limitation and on the basis of the finding of the study, it was very clear that twelve weeks of pilates training programme produced significant changes in motor fitness(expect agility), physiological and psychological variables of college men.

2) The twelve weeks of plyometric training programme produced significant changes in motor fitness, physiological and psychological variables of college men.

3) The results of the combined effect confirm positively and significantly the effects of pilates and plyometric training on motor fitness, physiological and psychological variables of college men.

4) The combination of pilates and plyometric training for a period of twelve weeks produced significant changes over selected motor fitness (speed, flexibility, agility, and muscular strength), physiological variables (resting pulse rate, Vo_2 max, anaerobic power and breath holding time) and psychological variables.

(Stress, anxiety, aggression and mood state) of college men than other two training groups of pilates and plyometric training.

5) When Pilates training compared with the plyometric training, the plyometric training produced significant changes over motor fitness, physiological (except breath holding time) and psychological variables of college men than pilates training.

6) In the case of breath holding time the pilates training improved better than the plyometric training, since pilates training composed breathing exercises.

7) From the results, it is inferred that the 12 weeks of combination of pilates and plyometric training is found to be most appropriate training protocol to bring out desirable changes over motor fitness, physiological and psychological variables of college men.

5.3. RECOMMENDATIONS

Based on the results of the present study, the following recommendations have been made.

1. The combination of Pilates and plyometric training is the appropriate training to produce significant changes in motor fitness physiological and psychological variables of college men.

2. Similar study may also be conducted for women.

3. Similar study may be conducted for school boys and girls.

4. Deep researches are to be conducted to find out the biochemical changes to pilates and plyometric training in college men.

5. Related study may be conducted to find out the hormonal responses to Pilates and plyometric training in college men.

6. Studies of similar nature may also be conducted by changing the dependent variables.

7. Suggested to include the Pilates and polymeric training in various training programmes to improve physical and physiological status.

8. It is recommended that a similar study can be conducted on a wide age sample and for longer duration.