

CHAPTER – V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Summary of the Study

In this summary, some of important components of each chapter, such as introduction of the study, review of related literatures, and methodology of the study, analysis and interpretation of the data are summarized briefly as follows.

Modern concept of physical education has given rise to a global perspective and has become one of the most viable factors in cross culture integration. Sports have its own language and can provide a medium for international understanding and goodwill among nations. It has assumed great importance not only for self actualization at the national level but for social maturation and survival at the global level.

In 21st century, physical education is no more a physical training only, or simply body building, or merely indulging in play activities or mass drills, or pertaining to physical fitness alone. It has emerged as multidimensional discipline.

The new physical education emphasizes education through the physical as a philosophical basis for sports, fitness and physical education, a philosophy in which activity is believed to contribute to physical, mental, social, and intellectual strength paving way for all-round, wholesome and harmonious development of an individual.

Physical fitness is the basic of all other fitness. Physical fitness is not only one of the most important keys to a healthy body; it is also the basis of dynamic and creative activity. Physical fitness has been defined by many people in several different ways. One point of consensus is that physical fitness is a desirable quality to possess. President Johnson emphasized that “physical fitness is a matter of fundamental importance to individual well being and to the progress and security of the nation of America”. President Kennedy referred to physical fitness as “the basis of all other forms of excellence”.

Fitness is a product of exercise and training .The exercise and training have been shown through research to possess important implications in the general health of people.

Because of the bridge between health and fitness, there has been a renewed interest in fitness and resurgence of effort toward attaining and maintaining it.

Physical fitness is not only one of the most important keys for a healthy body, but it is also the basis for dynamic and creative activity. A totally fit person is physically fit and has social and emotional maturity for his or her age. Fitness is constantly changing and is influenced by many factors. Fitness is based upon a solid foundation of good health. Healthful living implies freedom from disease, enough strength, endurance, skill, agility, capacity to meet the daily demands and sufficient reserves to meet extra ordinary stresses without undue fatigue, besides mental development and emotional balance according to the maturity level of the individual.

Physiologically, fitness which may be termed as training which is achieved through exercise or activities that promote the use of oxygen to burn fuel in working muscles. The components of physical fitness are strength, cardiovascular endurance, speed, agility, power, flexibility, balance and co-ordination.

Physical fitness involves in the performance of heart and lungs and the muscles of the body and since what we do with our bodies also affect what we can do with our minds. Fitness influences to some degree of qualities such as mental alertness and emotional stability.

As this study is two dimensional of health related physical fitness exercises and combination of therapeutic massage interventions, the following scientific analysis is associated with therapeutic massage interventions.

Massage is a general term for pressing, rubbing and manipulating your skin, muscles, tendons, ligaments and joints typically using hands and fingers for relaxing muscle spasm, relieving tension, improving circulation and hastening the elimination of wastes. Besides these benefits, it also stretches connective tissues and improves circulation.

Massaging is actually the oldest form of medical therapy there has been practiced on the human body. There are actually various types of massage that are known to man. They are all derived from the most celebrated civilizations and traditional beliefs of the ancient Greeks, Romans,

It actually started way back from 2700 BC when the ancient Eastern Chinese cultures performed massage in order to heal an array of ailments, ranging from pain from labor right up to paralysis.

Tombs associated with ancient Egypt were also discovered with paintings and images of figures being massaged on the walls. Moreover, Ayurveda, which is known to be a traditional medicine in India, is a form of therapeutic massage that uses aromatherapy spices and oils for healing properties.

Even known heroes from Greece and Rome such as the great Julius Caesar had massages performed daily on them in order to treat their nerve pain.

At present, massage techniques have already been modernized. They were enhanced so that they can be able to heal particular health conditions. For instance, those who were injured during the First World War underwent massage to remedy their nerve damage and also to relieve shell shock in the Western hospitals back in the 1930s.

To date, massages are still performed by many to treat a wide variety of ages. In fact, even babies and senior citizens can benefit from massages, despite being diagnosed under the intensive care, health clinics, health clubs, and other hospital settings.

According to medical research, massages can treat nerve damage, lumbar pain, paralysis, back pain, cancer, premature birth, stroke, heart attack, osteoarthritis, and fibromyalgia. Massage is said to be Eastern massage and western massage.

Eastern Massage

Eastern massage addresses energy flow and balance within the body, stimulating and soothing specific points along the energy meridians to create effects at other sites along those meridians. Instead of stroking and kneading,

Eastern massage therapists use pressure, rolling, rocking, and striking, all of which can be more vigorous than Western massage.

Western Massage

Traditional European massage is based on Western concepts of anatomy, pathology, and physiology. Western massage works on various parts of body, such as the digestive system, the nervous system, and the musculoskeletal system, for the purpose of realigning and restoring the whole system. It combines five basic strokes: effleurage (gliding), friction, percussion (tapping), petrissage (kneading), and vibration.

5.1.1. Statement of the Problem

The overall purpose of this study was to assess the role of combinations of health related physical fitness exercises and massages therapy in maximizing the strengths of calf and thigh muscles of College students ranging between the age of 19 and 23 years.

5.1.2. Objectives of the Study

The overall objectives of the present study were to explore the impacts of health related physical fitness exercises and massage therapy interventions on the selected physical variables in maximizing the strength of calf and thigh muscles of the College students of Visakhapatnam city.

5.1.3. Research Questions

In the course of the study, efforts were made to seek answers to the following basic questions.

I. Do the combinations of health related physical fitness exercises with therapeutic massage experience any effect on strengths of thigh and calf muscles?

II. What would be the effect of health related physical fitness exercises in maximizing strengths of thigh and calf muscles?

III. What would be the impact of therapeutic massage for maintaining healthy performance of thigh and calf muscles?

5.1.4. Hypotheses of the Present Study

1. There is no significant difference between Pre-tests and Post-tests of Control Group students with respect to Explosive Strength in Long Jump from stationary position, Speed-Strength in Shuttle Run, Speed-Strength in 50 Meters Dash, Speed, explosive-strength and functional performance of Right Leg from Hop Steps with Right Leg in a given distance of 20 meters, Speed, Explosive-strength and functional performance of Left Leg from Hop Steps with Left Leg in a given distance of 20 meters, Speed - endurance and strength of calf and thigh muscles from 800 Meters Run towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

2. There is no significant difference between Pre-tests and Post-tests of Experimental Group - A students with respect to Explosive Strength in Long Jump from stationary position, Speed-Strength in Shuttle Run, Speed-Strength in 50 Meters Dash, Speed, Explosive-strength and functional performance of Right Leg from Hop Steps with Right Leg in a given distance of 20 Meters, Speed, Explosive-strength and functional performance of Left Leg from Hop Steps with Left Leg in a given distance of 20 Meters, Speed - endurance and strength of calf and thigh muscles from 800 Meters Run towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

3. There is no significant difference between Pre-tests and Post-tests of Experimental Group - B students with respect to Explosive Strength in Long Jump from stationary position, Speed-Strength in Shuttle Run, Speed-Strength in 50 Meters Dash, Speed, Explosive-strength and functional performance of Right Leg from Hop Steps with Right Leg in a given distance of 20 Meters, Speed, Explosive-strength and functional performance of Left Leg from Hop Steps with Left Leg in a given distance of 20 Meters, speed -

endurance and strength of calf and thigh muscles from 800 Meters Run towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

5.1.5. Significance of the Study

1. The study will help to find out the effect of combinations of health related physical fitness exercises with therapeutic massage in maximizing strengths of calf and thigh muscles of male college students between the age group of nineteen and twenty three years.
2. The study will help to prepare an exercise program for the development of each fitness component and types of massage workouts for a continuous training program.
3. The results may be useful to the coaches, fitness trainers, Physical Education teachers and body masseurs/ masseuses for further development.
4. Different Colleges and Universities would use the findings of this research to make necessary adjustments in their training programs.

5.1.6. Delimitations (Scope) of the Study

1. This study is restricted to students from four Degree Colleges namely, Dr. Lankapalli Bullayya College, Prism Degree College, B.V.K. Degree College, and Gayatri Vidya Parishad Degree College. All Colleges are located in Visakhapatnam City and affiliated to Andhra University.
2. The number of subjects is restricted to 45 students from each college i.e., $45 \times 4 = 180$ (N=180).
3. The study was confined to only male college students with the age groups of 19 and 23 years during the academic year 2011-2012.
4. The subjects were randomized into three Experimental groups i.e., Control Group, Experimental Group - A and Experimental Group - B.

5. The researcher used all the six physical fitness items of AAHPER youth fitness testing manual to conduct the experiment.

5.1.7. Limitations of the Study

1. Heredity and environment factors, which might have influenced the result of this study could not be controlled or assessed.

2. The variations in climatic conditions such as temperature and humidity during the pre- tests and post- tests were not controlled and were recognized as a limitation.

4. Socioeconomic backgrounds of the subjects were not taken into consideration.

5. The day - to - day activities, rest period, food habits, and life style of the subjects could not be controlled.

6. Lack of sufficient financial support for facilitating the overall research work was registered as a limitation.

5.1.8. Sources of Data

The study employed 180 (N=180) male Volunteered students as a primary data source that are belonging to four colleges in the city of Visakhapatnam, namely B.V.K. Degree College, Dr.L.B. Degree College, Gayatri Vidya Parishad Degree College, and Prism Degree College.

In addition, secondary data source like books, research journals and scientific articles were also used in this study.

5.1.9. Experimental Design

The study employed 180 male Volunteered students who were made randomly into three groups for the research study as follows.

1. Experimental group as a **Control Group** (60 students from four colleges; each 15 students). This group includes subjects who never engaged in any

health related physical fitness exercises with therapeutic massage interventions.

2. Experimental group as an **Experimental Group - A** (60 students from four colleges; each 15 students). This group comprises subjects who engaged only in health related physical fitness exercises.

3. Experimental group as an **Experimental Group - B** (60 students from four colleges; each 15 students). This group comprises subjects who engaged both in health related physical fitness exercises with therapeutic massage interventions.

The experimental groups (except control group) were engaged in the training program for consecutive twelve weeks throughout the study period.

All groups were subjected to pre - test sessions prior to the training program for the experimental treatments.

Finally, for all groups, post-tests were administered after the twelfth week of the training period on the selected health related physical fitness variables with the help of American Association for Health, Physical Education and Recreation (AAHPER) youth fitness testing manual to find out the effect of health related physical fitness exercises with therapeutic massage interventions particularly related to the strength of calf and thigh muscles.

5.1.10. Selection of Variables

Based on the guide line of AAHPER youth fitness testing protocol, for experimental research studies like this one the following six variables were selected for pre-tests and post-test of this study.

- a) Long Jump from Stationary Position
- b) Shuttle Run
- c) 50 Meters Dash
- d) Hop steps with Right Leg (2x10 Meters)
- e) Hop Steps with Left Leg (2x10 Meters)
- f) 800 Meters Run

5.1.11. Frame of the Training Program

The training program of this study was structured based on the results and methodology employed for pilot study which was carried out previously i.e., types of exercises, frequency of exercises, intensity, and duration of time and techniques of massage were applied also in this training program.

Basing on the frame of the training program, types of exercises were divided in to two main parts. The first part includes 15 apparatus exercises (exercises with machines in Gym) which were practiced twice a week in the Gym. The second parts of the exercises were 13 free exercises practiced twice a week in the Gym, on stairs and on well laid 400 meter track (standard running track).

Massage interventions also were practiced throughout the training program. Some of the physiological and physical variables (4 variables) such as blood pressure, pulse rate, height and weight measurements were frequently observed during the training program.

5.1.12. Exercise Schedule

The running program of the training was scheduled in the evening session for Experimental group - A (subjects engaged only in health related physical fitness exercises) between 6p.m. and 6:50 p.m. for six days a week.

In the same way, a training program was set up in the morning session for experimental group - B (Subjects engaged both in health related physical fitness exercises with therapeutic massage interventions) between 6am and 6:50a.m. for three days a week and 6a.m. to7:25 a.m. for another three days a week.

Totally, six days a week were set-up for the exercise schedule i.e., Monday, Tuesday, Wednesday, Thursday, Friday and Saturday while Sunday was set up as a holiday or rest day for all experimental groups.

5.1.13. Procedures and Methods of Data Analysis

All tests for measuring the individual components of health-related physical fitness exercises with therapeutic massage interventions were conducted and the score of the subjects were collected and organized accordingly. Separate

score sheets were designed to note the performances and readings of each of the subject who took part in the test administration. Individual's scores on each of the 6 items for test and measurements and the means values of the independent variables' values were entered into the SPSS computer software. Means, Standard Deviation, Analysis of Variance (ANOVA) and t-test were calculated to see if significant differences were observed among the participants on independent physical fitness variables.

5.2. Major Findings of the Study

The following findings were drawn based on analysis and interpretation of the data.

1. There is no significant difference between Pre-tests and Post-tests of Control group students with respect to 'Explosive Strength in Long jump from stationary position' towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.
2. There is a significant difference between Pre-tests and Post-tests of 'Experimental Group - A' students with respect to 'Explosive Strength in Long Jump from stationary position' towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.
3. There is a significant difference between Pre-tests and Post-tests of 'Experimental Group - B' students with respect to 'Explosive Strength in Long Jump from stationary position' towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.
4. There is no significant difference between Pre-tests and Post tests of Control Group students with respect to 'Speed-Strength in Shuttle run' towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

5. There is a significant difference between Pre-tests and Post tests of 'Experimental Group - A' students with respect to 'Speed-Strength in Shuttle run' towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.
6. There is a significant difference between Pre-tests and Post-tests of 'Experimental Group - B' students with respect to 'Speed-Strength in Shuttle run' towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.
7. There is no significant difference between Pre-tests and Post-tests of Control Group students with respect to 'Speed-Strength in 50 meters dash' towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.
8. There is a significant difference between Pre-tests and Post-tests of 'Experimental Group - A' students with respect to 'Speed-Strength in 50 meters dash' towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.
9. There is a significant difference between Pre-tests and Post-tests of 'Experimental Group - B' students with respect to 'Speed-Strength in 50 meters dash' towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.
10. There is no significant difference between Pre-tests and Post-tests of Control Group students with respect to speed, explosive-strength and functional performance of Right Leg from Hop Steps with Right Leg in a given distance of 20 meters towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

11. There is a significant difference between Pre-tests and Post-tests of 'Experimental Group - A' students with respect to speed, explosive-strength and functional performance of Right Leg from Hop Steps with Right Leg in a given distance of 20 meters towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

12. There is a significant difference between Pre-tests and Post-tests of 'Experimental Group - B' students with respect to speed, explosive-strength and functional performance of Right Leg from Hop Steps with Right Leg in a given distance of 20 meters towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

13. There is no significant difference between Pre-tests and Post-tests of Control Group students with respect to speed, explosive-strength and functional performance of Left Leg from Hop Steps with Left Leg in a given distance of 20 meters towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

14. There is a significant difference between Pre-tests and Post-tests of 'Experimental Group - A' students with respect to speed, explosive-strength and functional performance of Left Leg from Hop Steps with Left Leg in a given distance of 20 meters towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

15. There is a significant difference between Pre-test and Post test 'Experimental Group - B' students with respect to 'speed, explosive-strength and functional performance of Left Leg from Hop Steps with Left Leg in a given distance of 20 meters towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

16. There is a significant difference between Pre-tests and Post- tests of control Group students with respect to speed - endurance and strength of

thigh and calf muscles from 800 meters run towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

17. There is a significant difference between Pre-test and Post test 'Experimental Group - A' students with respect to speed - endurance and strength of thigh and calf muscles from 800 meters run towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

18. There is a significant difference between Pre-tests and Post-tests of 'Experimental Group - B' students with respect to speed - endurance and strength of thigh and calf muscles from 800 meters run towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

19. There is a significant difference among the students based on their test groups i.e., Control Group , Experimental-A and Experimental - B, with respect to Explosive Strength in Long jump from stationary position towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

20. There is a significant difference among the students based on their test group i.e., Control, Experimental-A and Experimental - B, with respect to Speed-Strength in Shuttle run towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

21. There is a significant difference among the students based on their test groups i.e., Control Group , Experimental-A and Experimental - B, with respect to Speed-Strength in 50 meters dash towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

22. There is a significant difference among the students based on their test groups i.e., Control Group, Experimental-A and Experimental - B, with respect to speed, explosive-strength and functional performance of Right Leg from Hop Steps with Right Leg in a given distance of 20 meters towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

23. There is no significant difference among the students based on their test groups i.e., Control Group, Experimental-A and Experimental - B, with respect to speed, explosive-strength and functional performance of Left Leg from Hop Steps with Left Leg in a given distance of 20 meters towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

24. There is no significant difference among the students based on their test groups i.e., Control Group, Experimental-A and Experimental - B, with respect to speed - endurance and strength of thigh and calf muscles from 800 meters run towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

25. There is a significant relationship between Control Group students of test item - I with test item - II, III and IV, test item - II with test item of IV and test item - IV with test item - V towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

26. There is a significant relationship between 'Experimental - A' group students of all test items towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

27. There is a significant relationship between 'Experimental - B' group students of all test items towards the Effect of Health Related Physical Fitness

Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

28. There is a significant relationship between Control Group, Experimental Group - A, and Experimental Group - B students towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

29. There is a significant relationship between pre-tests and post-tests of each activity of all test items of Control Group towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

30. There is a significant relationship between pre-tests and post tests of each activity of test items (variables) of Experimental-A group except test item V of explosive-strength and functional performances of the left leg from Hop Steps with Left Leg in a given distance of 20 meters towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

31. There is a significant relationship between pre-tests and post- tests of each activity of test items (variables) of Experimental-B Group except test item V of explosive-strength and functional performances of the left leg from hop steps with left leg in a given distance of 20 meters towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

32. There is a significant relationship between Control Group Pre-test students of Variable IV with V towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

33. There is a significant relationship between Control Group Post-test students of Variables I with III and test items IV with V towards the Effect of

Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

34. There is a significant relationship between 'Experimental - A' group Pre-test students of Variables IV and Variable VI towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

35. There is no significant relationship between 'Experimental - A' group Post-test students of all Variables towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

36. There is a significant relationship between 'Experimental - B' group Pre-test students of Variables II and Variable III and VI, Variable III and VI towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

37. There is a significant relationship between 'Experimental - B' group Post-test students of Variables II and Variable III towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City.

5.3. Conclusions

The following conclusions were drawn based on the findings of the study.

1. It is observed from the major findings of the study that the Experimental Group - A students have showed a significant improvement in their performances of all six test items i.e., Explosive Strength in Long jump from stationary position, Speed-Strength in Shuttle run, Speed-strength in 50 meters dash, Speed, Explosive-strength and functional performance of Right Leg from Hop Steps with Right Leg in a given distance of 20 meters, Speed, Explosive-strength and functional performance of Left Leg from Hop Steps with Left Leg in a given distance of 20 meters and Speed - endurance and Strength of Thigh and Calf muscles from 800 meters run.

2. It is observed from the major findings of the study that the Experimental Group - B students have showed a significant improvement in their performances of all six test items i.e., Explosive Strength in Long jump from stationary position, Speed-Strength in Shuttle run, Speed-strength in 50 meters dash, Speed, Explosive-strength and functional performance of Right Leg from Hop Steps with Right Leg in a given distance of 20 meters, Speed, Explosive-strength and functional performance of Left Leg from Hop Steps with Left Leg in a given distance of 20 meters and Speed - endurance and Strength of Calf and Thigh muscles from 800 meters run.

3. The training program of Experimental Group-B students' is significantly effective than the Experimental Group - A students' training program and Control group in promoting desirable changes in the selected physical fitness variables such as Long jump from stationary position, Shuttle run, 50 meters dash, Hop steps with right leg, Hop steps with left leg, and 800 meters run. The reason for higher significant improvement of Experimental Group -B students' is that the Experimental Group -B students were engaged in the training program of both health related physical fitness exercises and therapeutic massage interventions while the Experimental Group -A students were engaged only in the training program of health related physical fitness exercises.

4. The training program of Experimental Group - A students' is significantly effective than the Control Group students in promoting desirable changes in the selected physical fitness variables such as Long jump from stationary position, Shuttle run, 50 meters dash, Hop steps with right leg, Hop steps with left leg, and 800 meters run. The reason for higher significant improvement of Experimental Group -A students' is that the Experimental Group -A students were engaged in the training program of health related physical fitness exercises while the Control Group students were not engaged in exercises and therapeutic massage intervention.

5. The Control Group did not show any significant change in any of the selected variables at the end of the twelfth week of training program as they were not engaged in any program of health related physical fitness exercises and therapeutic massage interventions.

6. It is observed from the major findings of the study that the combination of health related physical fitness exercises and therapeutic massage intervention are more important compared to only health related physical fitness exercises in maximizing and maintaining strengths of Calf and Thigh muscles of students took part in this research study..

7. It is observed from the major findings of the study that there are a significant differences in all Pre-tests and Post-tests of Experimental Group - A students and Experimental Group - B students with respect to all physical fitness variables towards the Effect of Health Related Physical Fitness Exercises and Massage Therapy in maximizing strengths of Calf and Thigh Muscles of the College Students of Visakhapatnam City. The reason for showing the better performance is due to involving in a regular health related physical fitness exercises and therapeutic massage intervention in comparing to Control Group students who never involved in the regular health related physical fitness exercises and therapeutic massage interventions.

5.4. Recommendations

Within the limitations of the study and from the major findings and conclusions of the analysis of the data, the following recommendations are made.

1. The findings of this study are helpful to physical trainers to assess the physical fitness of their students and prepare a training plan for improvement of their level of physical fitness.
2. The findings of this study perhaps give some highlights of scientific information to physical therapists, masseurs /masseuses so as to use as a manual in their future careers
3. The findings of the study are also useful to study the health related physical fitness of college and University students of other cities and countries rather than the city of Visakhapatnam, India.
4. It is also recommended that similar studies may be undertaken using other variables of physical fitness.
5. Future research may focus on the same area to verify the consistency of these findings by employing both quantitative and qualitative techniques with more population of students in the surveyed research area and/or across other disciplines.
6. Since the skill related physical fitness is very desirable aspect for all the sports persons and also for those who wish to participate in fitness programs for health related physical fitness, health development and preservation, more research has to be conducted in this area so that the skill related physical fitness may be better preserved.
7. Research may also be needed to analyze the effect of exercises and massage on students' academic achievements.
8. It is recommended that a study can be conducted on collage male and female students with respect to effective weight management and/or reduction of obesity.

9. It is recommended that similar study can be conducted on collage male and female students with respect to Stress management through exercises and massage therapy.
10. A similar study may be undertaken on effect of nutrition with respect to the selected physical fitness variables.
11. It is recommended that a study can be conducted on management of diabetes mellitus for the people in different walks of life.
12. It is recommended that similar study can be conducted on management of Rheumatoid Arthritis for the people in different walks of life.
13. It is recommended that a comparative study may be conducted on physical, physiological and Psychological variables.
14. It is recommended that similar study can be conducted with respect to Integration of Health, Sports and Physical Education.
15. It is recommended that similar study can be conducted with respect to integration of Yoga, Gymnastics and Swimming.
16. Studies verifying the status of health related physical fitness of the School children and College students of various age groups and various geographical boundaries may also be undertaken on similar lines.
17. A study with more experimental groups may be conducted on a large sample for a long duration of training period so as to ascertain the amount of improvement.
18. It is proposed that similar type of study can be designed and implemented for middle aged men and women of various categories of employees, officers, professors (academic lecturers).
19. It is highly recommended that parents must encourage and motivate their children to participate in physical fitness exercises during their college studies and throughout their life.

20. It is highly recommended that administrators and sports associations have to encourage sports activities in the community for improving health and skill related physical fitness performances.

21. It is also recommended that physical fitness experts may prepare a regular physical fitness program in the community for improving health related physical fitness performances of the society.

22. It is also advised that private sectors may take role in facilitating adequate facilities and proper equipment for fitness and massage centers so as to help the community in improving and maintaining overall health status.

23. It is recommended that the Government must provide adequate infrastructural facilities and proper equipment with respect to fitness and massage centers, play grounds, Gyms, swimming pools and etc in different cities and the country at large as these centers can play an imperative role in promoting and supporting healthy life styles of the people in different walks of life.

24. It is proposed that the Government must give due attention in preparing qualified and trained professionals in Exercise and massage sciences in order to render basic services to the community thereby improve and make smooth the quality of life.

BIBLIOGRAPHY

BOOKS

The following listed books were used by the investigator. The books were commonly used as resource materials both in health related physical fitness exercises and therapeutic massage interventions for this study.

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