CHAPTER 6

SUMMARY, CONCLUSION
AND
RECOMMENDATIONS
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The present investigation, "Effect of Aging on Certain Physiological and Psychological Parameters of Yoga Practitioners, Dynamic Exercise Practitioners and Inactive Adults", was undertaken to detect the difference amongst three type of subjects.

It was observed that old people face lot of problems in aging process. It had been noted that as a result of aging there was deterioration of the fitness level of the adults. The reflexes go down and faces a lot of problems about the health, increase in the medical care expenditure and shortened life expectancy. But the present researcher observed that those who were active or doing some type of physical activity or exertion, they look much healthier and observed to be alert than those who don’t involve in any type of physical activity. On reviewing the literature in this area, it was noted that a number of studies had been completed in relation to the effect of aging on physical fitness, motor abilities and cardiopulmonary endurance etc. As it had been found that no one attempted to study the effect of physiological parameters of yoga practitioners, dynamic exercise practitioners and inactive adults. While reviewing literature from the library, the researcher came across the studies done on aging with reference to muscle fitness, as a single parameter of physiological, psychological fitness and dynamic exercises. Nobody had done the comparison with the yoga practices. Thus the researcher selected the subject for further studies, the effect of aging process in physiological, psychological parameters of yoga practitioners, dynamic exercise practitioners and inactive adults.
The purpose of the study was to record, analyze and compare the physically active subjects i.e. doing dynamic exercises and yoga practices which were also compared with the inactive adults, along-with certain physiological and psychological parameters. The analyzed data was used for the comparison of the subjects to find out which type of adults had got sufficient psycho-physiological fitness.

To know physiological parameters like blood cholesterol, Hemoglobin, Cardiorespiratory index, Health status (Health cert. Under the strict guidance of medical practitioners) with different age groups and various type of physical activity and inactivity was investigated. To know the psychological parameters like Neuroticism, reaction time, (Reflex action), and movement time was tested.

Research still continues to identify the exact mechanisms involved in the aging process. However even scientific data continuously pour in the aging process in the field of geriatrics and gerontology. The aging process could also be arrested by other simpler techniques such as low fat diet, higher fiber diet, exercise weight regulation and reduction of stress could help to slow down the deterioration of human systems. These factors might control the systems and will keep the mind and body fit, healthy and also lengthen the life span of the individuals.

The effect of aging is the degeneration of the physiological, nervous, physical health. As has been stated that exercise may delay the aging process. It may also delay the degeneration of systems. The present study will explore whether yoga practitioners or dynamic exercise practitioners were superior to that of inactive adults in relation to their physiological, psychological fitness parameters.

The findings of the study would provide the scientific base about the importance of physical exercises to delay the aging process. The present study may also support the earlier statements of the investigators in the field of geriatrics and gerontology.
It was hypothesized that the adults who were involved frequently in yoga practices and physical activities might be physiologically and psychologically more efficient than inactive adults and participation in exercise may slow down the aging effect in relation to physiological, and psychological parameters.

The sub hypotheses were:

1. It was hypothesized that as the age increases there might be degeneration in the functioning of human body systems with reference to physiological, psychological and physical parameters.

2. It was hypothesized that dynamic exercise practitioners and yoga practitioners were expected better in level of blood cholesterol than inactive subjects.

3. It was hypothesized that the level of hemoglobin of both dynamic exercise practitioners and yoga practitioners expected to be higher than that of the inactive subjects.

4. The cardiorespiratory index of dynamic exercise practitioners might be better than the yoga practitioners and inactive adults.

5. It was hypothesized that the yoga practitioners were expected to be much healthier than that of dynamic exercise practitioners and inactive subjects.

6. It was hypothesized that the yoga practitioners were expected to be less neurotic than that of dynamic exercise practitioners and inactive subjects.

7. The natural response to the various stimulus with respect to RT and MT of both dynamic exercise practitioners and yoga practitioners might be better than that of the inactive adults.

The delimitations of problem may be stated as under.

1. The subjects selected for the study were exercising minimum 30 minute of dynamic exercises or practicing yoga.
2. The subjects who were selected for the study were doing exercises since last more than one year.

3. The level of blood cholesterol was isolated according to the method of clinical laboratory lipid research programme.

4. The level of hemoglobin was counted with the help of Sahil’s Hemanol method.

5. Cardiorespiratory endurance was calculated with help of Harvard step test.

6. Neuroticism was found out with the help of Kundu’s Neurotic Personality Inventory.

7. The experts further confirmed laboratory findings of blood cholesterol, hemoglobin.

8. The adults who were participating in dynamic exercises and practicing yogasanas and kriyas for more than one year was also considered as subject for the study.

The limitations of problem may be included as under.

1. The researcher had no control over the intensity, speed, resistance and repetitions of the dynamic exercise practitioners. The researcher had no control over the diet, living styles, Socio-economic status and the routine activities of the subjects. The researcher had no control over the site of exercise area. Subjects were practicing on playgrounds, yoga centers, open spaces, garden or even at home too. The researcher had no control over the system or ways of adaptation of exercise practices. Subjects were practicing individually or collectively. Similarly the investigator had no control over the type of yogasanas or Kriyas that were being practicing by yoga practitioners.

2. There might be many subjects participating in dynamic activity or yoga practice more than one year.

3. There might be many subjects, who were exercising dynamic activity or yoga practices more than thirty minutes.

4. The age of the subjects was considered purely on the basis of date of birth record in their board / university documents.
5. During the period of study the subjects were not provided any special coaching either for dynamic exercise or for yoga practices.

The inactive adults were selected from the various office workers and retired people and traders from Amravati city by simple random sampling method by lottery system. The dynamic exercise practitioners were selected from 19th Veterans National Athletics Championship 1997. The yoga practitioners were selected from Deeparchan yoga center Rajapeth Amravati, Yoga Bhavan and Research Center Maltekdi, Amravati and Janardhan Swami Yoga Bhavan Ram Nagar Nagpur. The data were collected under the following sequence.


6. Reaction time and Movement time

The subjects for the research were 120. They were divided into four equal groups i.e. each group was consisted of 30 subjects of equal age category including 10 inactive adults, 10 dynamic exercise practitioners and 10 yoga practitioners. The age groups were 51-53; 54-56; 57-59; 60-62.

- For the determination of cholesterol in serum or plasma computerized method of cholesterol clinical diagnosis was used.
- For the hemoglobin estimation of the sample of blood Sahli’s Hemoglobinometer was used.
- The C-R index of the subjects was estimated by Harvard step test.
- For the determination of medical fitness twelve-parameter medical fitness test was used which was constructed by Saifuddin Khan.
- To measure the degree of neuroticism in the present study Kundu’s neurotic personality inventory (KNPI) was used.
- Reaction and movement time data was collected from the footstep reaction timer.
The purpose of the study was to examine the association amongst the inactive subjects, dynamic exercise practitioners and yoga practitioners with physiological and psychological parameters. The physiological parameters were namely blood cholesterol, hemoglobin, C-R index and medical fitness. The psychological parameters were namely personality index, reaction time and movement time.

Findings of the Study

1. The level of blood cholesterol went on increasing with age. The inactive adults at the higher age group were at the alarming level of blood cholesterol, the active subjects and yoga practitioners were within the normal range. Slightly high level of blood cholesterol amongst yoga practitioners was found at higher age group 60-62.

2. Statistically significant association was observed in the age group 51-53 for inactive subjects and active subjects, inactive subjects and yoga practitioners, active subjects and yoga practitioners. In the age group 57-59 and 60-62 the significant association was observed amongst inactive subjects and active subjects, inactive subjects and yoga practitioners.

3. Statistically insignificant association was observed in the age group 54-55 for inactive subjects and active subjects, inactive subjects and yoga practitioners, active subjects and yoga practitioners.

4. The inactive subjects were found to be with low level of hemoglobin as compared to active subjects and yoga practitioners. Both active subjects and yoga practitioners were within the normal level of hemoglobin up to the age group 60-62.

5. Both activities i.e. yoga practices and dynamic exercise practices might contribute significantly to maintain the normal hemoglobin level.
6. Statistically insignificant association was observed between hemoglobin and all the age groups amongst inactive subjects and active subjects, inactive subjects and yoga practitioners, active subjects and yoga practitioners.

7. The C-R index of active subjects and yoga practitioners goes down decreasing from excellent to good category. The C-R index of inactive subjects of age group 54-52 found to be average category. While in the age group 51-53 it was found to be good category of C-R index.

8. Statistically insignificant association was observed between C-R index and all age group amongst inactive subjects and active subjects, inactive subjects and yoga practitioners and active subjects and yoga practitioners.

9. Medical fitness of dynamic exercise practitioners and yoga practitioners at the age groups ranges from 51-59 would be of good category and at the age group 60-62 would be of average category. While the inactive adults of the all age groups 51-62 would be of average category.

10. Statistically insignificant association was found between medical fitness amongst inactive subjects and active subjects, inactive subjects and yoga practitioners and active subjects and yoga practitioners.

11. The yoga practitioners were found to be comparatively better in neurotic characteristics than dynamic exercise practitioners. The inactive adults were slightly neurotic.

12. Statistically significant association was found between personality index and all age groups amongst inactive subjects and active subjects, inactive subjects and yoga practitioners, active subjects and yoga practitioners. At the age group 60-62 slightly insignificant association between inactive subjects and active subjects was seen.

13. The audile reaction and movement time for active adults and yoga practitioners were better in audile reaction time than the inactive adults. Active adults exhibits better
audile reaction and movement time than inactive adults. Same trend was observed amongst yoga practitioners.

14. Statistically insignificant association was observed between the audile reaction and movement time amongst inactive subjects and active subjects, inactive subjects and yoga practitioners, active subjects and yoga practitioners of all the age groups ranging from 51-62.

15. Active subjects and yoga practitioners were better in visual reaction and movement time than the inactive subjects. Active subjects exhibited better visual reaction and movement time than inactive subjects. Same trend was observed amongst yoga practitioners.

16. Statistically insignificant association was observed between the visual reaction and movement time amongst inactive subjects and active subjects, inactive subjects and yoga practitioners, active subjects and yoga practitioners of all the age groups ranging from 51-62.

17. Active subjects exhibits better touch reaction and movement time than inactive adults. The same trend was observed amongst yoga practitioners.

18. Statistically insignificant association was observed between the touch reaction and movement time amongst inactive subjects and active subjects, inactive subjects and yoga practitioners, active subjects and yoga practitioners of all the age groups ranging from 51-62.

CONCLUSION

In view of the above findings, it may be concluded that the dynamic exercises and yogasana practices were indicating significant effect on physiological and psychological parameters of healthy aging.
RECOMMENDATIONS

1. In view of the above findings to avoid the risk of coronary heart disease it was recommended that every individual should pursue the dynamic exercises at least for 30 minutes per day for the control level of blood cholesterol.

2. It was suggested that along with iron rich diet every individual should adopt the exercise programme at least for 30 minutes per day either by following dynamic exercises or yoga practices to maintain level of hemoglobin. For the anemic subjects it was also recommended that they might take supplementation of iron with vitamin C in the guidance of medical practitioners before they start the exercise programme.

3. Cardio-Respiratory (C-R) index represents the cardiac efficiency. C-R index could be improved with the exercises only, it was recommended that every individual should follow the dynamic exercises at least for 30 minutes per day for the efficient cardiac functioning.

4. It was recommended that every individual should exercise at least for 30 minutes per day either by following dynamic exercises or yoga practices to maintain medical fitness.

5. To control neuroticism it was recommended that every individual must go through the yoga practices at least for 30 minutes per day.

6. To keep stimulus response better it was recommended that every individual should follow the exercise at least for 30 minutes per day either by following dynamic exercises or yoga practices.

7. In general it may be assumed that exercise might play an important role in the improvement of life expectancy without any psycho-physiological disorders. Also it may be stated that both dynamic exercises and yoga practices plays important role to check aging process.
8. Thus it was recommended that every individual should adopt both exercise programmes i.e. dynamic exercises and yoga practices at least for 30 minutes per day either simultaneously or followed on alternate days.

**SCOPE OF THE STUDY**

There is a need for further studies in the field of geriatrics and gerontology, which could be able to improve the life expectancy of human beings. There were several studies already completed in the respective areas. The studies completed in the aging process were either descriptive or cross-sectional. Therefore, there was a need for some more experimental studies in the related areas of aging process. The scope for further studies might be suggested as follows.

1. The corresponding study could be undertaken as an experimental study with controlled groups of both dynamic exercise practitioners and yoga practitioners.
2. The same study could be carried out amongst higher age groups up to 80 years or more.
3. The identical study could be carried out for the comparison of males and females of the same age group.