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Research Article

Effect of Selected Asanas and Pranayamas on Body Composition and Cardio-respiratory

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ABSTRACT

The purpose of the present study was to know the effect of selected asanas and pranayamas on the body composition and cardiorespiratory system of the participants of the Akhand Yoga Kaaryashala. Yoga is an ancient discipline designed to bring balance and health to the physical, mental, emotional, and spiritual dimensions of the individual. The pivotal contributions of Maharshi Patanjali in organizing yoga practices through his Yoga Sutras laid a structured foundation. The present experimental investigation was conducted on the participants of Akhand Yoga Kaaryshala's. The researchers collected pre-data of the participants in the first week of August 2022, when they joined the workshop, and post-data collected in the last week of December 2022. The total number of participants was twenty-six (26) but twenty (20) (14 male and 06 female) were included in the study based on their attendance. The age of participants was from forty (40) to forty-nine (49). The researchers collected data by using varied equipment as the body weight of the participants was recorded in its unit kilogram (kg) through a weighing machine and the fat percentage of triceps, biceps, sub-scapula region, super-iliac region, and calf muscle region were measured in its unit millimeters (mm) by using 'Fat Analyzer' skin fold caliper. The blood pressure and pulse rate were recorded through Dr. Morepen Blood Pressure Monitor, Model: BP-09 in their unit millimeters of mercury (mmHg) and beat per minute (bpm) respectively. The vital capacity of the participants was measured by using a wet spirometer in its unit milliliters. The participants of the study provided a common yoga protocol with few additions as some asanas and cardio warming-up exercises were added. After completing the collection of the post-data phase researchers had to enter the data into the Excel sheet and for analyzing researchers used Statistical Package of Social Science (SPSS) version-27, for the comparison of pre and post-data of the experimental group paired sample t-test was applied. It is concluded that yoga asanas and pranayama training have a good impact on body composition and cardiorespiratory functioning. Yoga plays a crucial role in maintaining the health and well-being of an individual.

Key Words: Asanas, Pranayamas, Body Composition, Cardio-respiratory, Akhand Yoga Kaaryashala.

Introduction

Yoga is an ancient discipline designed to bring balance and health to the physical, mental, emotional, and spiritual dimensions of the individual. Yoga is often depicted as a metaphor for a tree and consists of eight aspects or "limbs": yama (universal ethics), niyama (individual ethics), asana (physical postures), pranayama (breath control), pratyahara (control of the senses), dharana (concentration), dhyana (meditation), and samadhi (happiness). Yoga's deep-rooted origins span several ancient cultures, with India being its epicenter.

The pivotal contributions of Maharshi Patanjali in organizing yoga practices through his Yoga Sutras laid a structured foundation. This era also witnessed the influence of sages like Mahavir and Buddha, and significant texts such as the Bhagavad Gita, which collectively enriched the yoga tradition. From 800 AD to 1700 AD, figures such as the Acharyatrayas and Natha Yogis played crucial roles in popularizing Hatha Yoga. Their teachings emphasized physical postures and breathing techniques, which are integral to contemporary yoga practices. Between 1700 AD and 1900 AD, influential yoga-charyas like Ramana Maharshi and Swami Vivekananda propelled the evolution of Raja Yoga. Their efforts facilitated a deeper understanding and global dissemination of yoga practices. The modern period also saw yoga gaining international recognition for its health benefits, thanks to personalities such as BKS Iyengar and Swami Sivananda Scientific research underscores yoga's comprehensive health benefits. It helps maintain nervous system equilibrium and reduces stress susceptibility. Yoga practices, including asanas (poses) and pranayamas (breathing exercises), contribute to weight management, improved body composition, and enhanced skin responsiveness. Regular practice also elevates brain waves associated with relaxation, aiding in mental well-being. Yoga's impact extends to improving digestion, hormone regulation, muscle and joint flexibility, posture, strength, and endurance. Practitioners often experience increased energy levels, better sleep quality, stronger immune function, and reduced pain perception, making yoga a holistic approach to health. Modern lifestyles, characterized by reduced physical activity, have led to an increased prevalence of conditions like hypertension, diabetes, high cholesterol, and obesity. These health issues, once rare, are now common due to dietary shifts, sedentary habits, and heightened stress levels. Regular physical activity can mitigate these risks, improving cardiovascular health, mental health, and overall longevity. Scientific studies highlight yoga's positive effects on cardiovascular and respiratory health. Practices such as asanas and pranayamas improve heart rate, blood pressure, and overall well-being. The Ayush Ministry's initiatives aim to position India as a global yoga leader by 2047. This includes the establishment of International Yoga Day on June 21st, celebrated worldwide. The Ministry has also developed the Common Yoga Protocol, a standardized sequence of yoga exercises and breathing techniques suitable for all ages, promoting accessibility and widespread practice. One of the indicators that increase the standard of living and satisfaction is body composition. Body composition can be shown between both objective and subjective indicators because people with proper body analysis will gain self-confidence, thus it can be said that their living standards are affected. Some studies have revealed a statistically significant relationship between body analysis, physical activity, and standard of living. The historical evolution of yoga, from its ancient roots to its modern global influence, reflects its enduring significance. Yoga's myriad health benefits, supported by scientific research, highlight its role in contemporary health and wellness. Initiatives by the Ayush Ministry further ensure that yoga continues to be a valuable practice accessible to people worldwide, fostering a holistic approach to physical and mental well-being.

Akhand Yoga Kaaryshala

'Akhand Yoga Kaaryshala' is the name of a workshop of yoga running by the Department of Physical Education, Aligarh Muslim University, Aligarh (U.P). This workshop has been started on 21 June 2022 after making the big announcement by the director of the workshop on the occasion of International Day of Yoga 2022 (21.06.2022). This workshop is unique in that it is free of cost for all and there is no hurdle like religion, age, gender, profession, etc. it has been run continuously without any break for a single day since it started, as of now on 21 June 2024 it has completed two years (732 days). In this workshop every day a session is conducted for 1 hour in the morning as per common yoga protocol. It will run continuously in the future too.

MATERIAL AND METHODS OF RESEARCH

Methodology is the essence of every investigation, this section comprises procedure, tools and techniques used in the concerned study.

Participants

The present experimental investigation was conducted on the participants of Akhand Yoga Kaaryshala's from first (01) of August 2022 to thirty first (31) of December 2022. The attendance was marked by the researcher on regular basis for the whole period of five months.

Methods

The researchers have collected pre data of the participants in the first week of August when they joined workshop and post data collected in the last week of December. The total number of participants were twenty-six (26) but twenty (20) (14 male and 06 female) were included in the study on the basis of their attendance. The age of participants was from forty (40) to forty nine (49). The researchers made clear to all the participants the purpose of the study before conducting pre-data phase. The researchers have collected data from the participants for body composition variables (Body weight, Triceps skinfold width, Biceps skinfold width, Sub-scapula skinfold width, Supra-iliac skinfold width and Calf Skinfold width) and cardio-respiratory variables (Blood pressure Systole and Diastole, Pulse Rate and Vital Capacity) by using their respective apparatus. The participants of the study provided common yoga protocol with few addition as some asanas and cardio warming up exercises were added.

The researchers collected data by using varied equipment as the body weight of the participants recorded in its unit kilogram (kg) through a weighing machine and fat percentage of triceps skinfold width, biceps skinfold width, sub-scapula skinfold width, supra-iliac skinfold width and calf skinfold width were measured in its unit millimeters (mm) by using 'Fat Analyzer' skinfold caliper. The blood pressure and pulse rate were recorded through Dr. Morepen Blood Pressure Monitor, Model: BP-09 in their unit millimeters of mercury (mmHg) and beat per minute (bpm) respectively. The vital capacity of the participants was measured by using wet spirometer in its unit milliliters.

Procedure

The procedure followed by the researchers to collect the data from the participants was the experimental research in which researchers had informed to all the participants before two days from the day of data collection. All the participants were at rest before data collection on the day of their data collection

a) Body Weight: To measure weight of the participants, researchers have placed the weighing machine on the floor and asked to the participants remove your shoes and keep a side all the weighted things like mobile phone, wallet, vehicle's key etc. then stand on machine erectly with equal weight on both the legs.

b) Triceps Skinfold Width: Researchers have asked to the participants put off the shirt and stand in ease position with hanging arm, researchers marked the point at mid of the upper arm then picked up the skin by the left hand fingers, by the right hand skin fold caliper applied and the measurement in mm was recorded.

c) Biceps Skinfold Width: In biceps skinfold measurement same procedure followed as in triceps, except the measuring site as in triceps that was back side of the upper arm on the triceps muscles and in the case of biceps measuring site is on front side of the upper arm on the biceps muscles

d) Subscapular Skinfold Width: The skin fold was picked diagonally below the inferior angle of the scapula, researchers applied jaws of the caliper and noted the reading in mm.

e) Supra-iliac Skinfold Width: To measure the fat over the iliac supine of the abdomen, picked the skinfold of the supra-iliac by the left hand and by the right hand caliper applied then recorded the measurement.

f) Calf Skinfold Width: Participants were asked to sit on the table with hanging legs, the researcher picked skinfold at mid-point of the lower leg on the medial side of the calf muscles and applied the caliper and reading was noted

g) Blood pressure: The participants asked to sit on the chair with straight supine and right arm extend straight, don't talk and do focus on your normal breath while researchers have applied digital Dr. Morepen Blood Pressure Monitor, Model: BP-09, to measure blood pressure. The arm cuff of the machine rap up on the right arm immediate above the elbow and press the air pump then lose the control valve and reading of the machine was recorded systole and diastole separately.

h) Pulse Rate: The pulse rate of the participants measured in sitting position by using Dr. Morepen Blood Pressure Monitor, Model: BP-09, at the same time machine shows the blood pressure systole and diastole and pulse rate results.

i) Vital Capacity: To measure the vital capacity of the participants researchers have used wet spirometer that placed on the floor, researchers asked to the participants sit on the chair in front of spirometer, deep inhale with full efforts and then deep exhale in the mouth of extending tube of the spirometer with full efforts, researchers have recorded that in litters

Statistical tools and techniques

After completed the collection of post data phase researchers had enter the data into the excel sheet and for analyzing researchers had used Statistical Package of Social Science (SPSS) version-27, and for the comparison of pre and post data of the experimental group paired sample t test was applied.

RESULTS

Table No: 01. The mean score and standard deviation of body composition variables.

Data Type	Variable	Mean	N	St. Deviation
Pre-Data	Body Weight	77.45	20	15.82
Post-Data	Body Weight	75.50	20	14.17
Pre-Data	Triceps Skinfold Width	20.20	20	9.01
Post-Data	Triceps Skinfold Width	18.15	20	8.17
Pre-Data	Biceps Skinfold Width	12.40	20	8.58
Post-Data	Biceps Skinfold Width	10.90	20	7.01
Pre-Data	Sub-scapular Skinfold Width	25.15	20	11.62
Post-Data	Sub-scapular Skinfold Width	22.40	20	11.97
Pre-Data	Supra-iliac Skinfold Width	26.90	20	8.71
Post-Data	Supra-iliac Skinfold Width	24.70	20	10.35
Pre-Data	Calf Skinfold Width	17.65	20	14.23
Post-Data	Calf Skinfold Width	15.25	20	11.80

Figure 01: Graphical representation of pre and post of body composition variables.

Table No: 02. The mean score and standard deviation of cardio-respiratory variables.

Data Type	Variable	Mean	N	St. Deviation
Pre-Data	Blood pressure Systole	125.35	20	10.12
Post-Data	Blood pressure Systole	120.55	20	9.99
Pre-Data	Blood pressure Diastole	80.05	20	6.42
Post-Data	Blood pressure Diastole	77.55	20	5.42
Pre-Data	Pulse Rate	79.95	20	8.79
Post-Data	Pulse Rate	74.85	20	7.05
Pre-Data	Vital Capacity	2.45	20	.54
Post-Data	Vital Capacity	3.10	20	.65

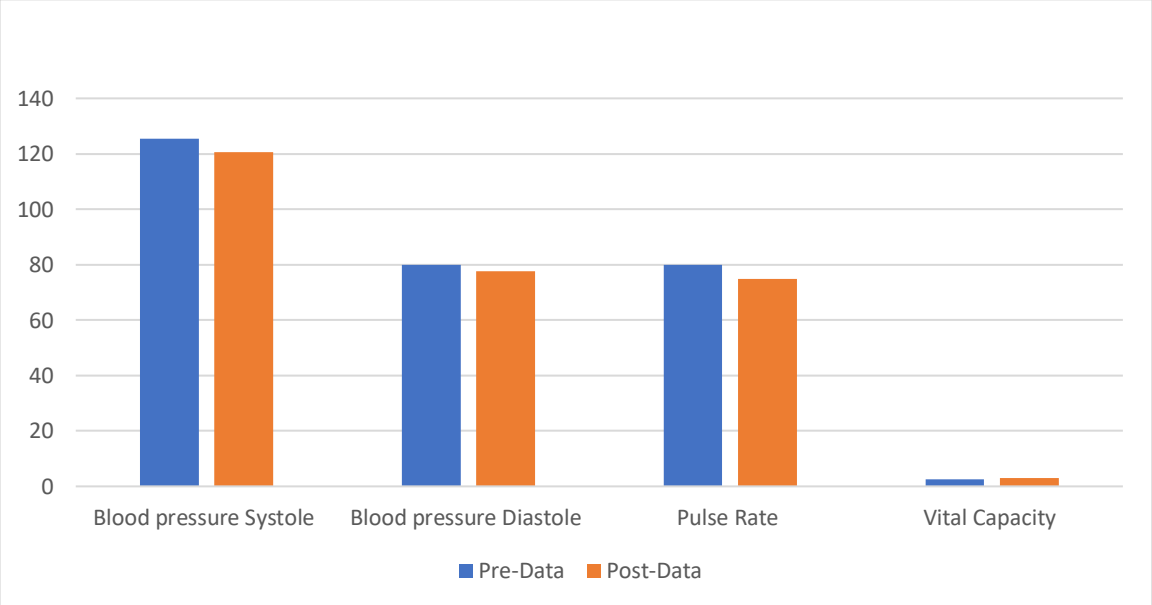

Figure 02: Graphical representation of pre and post of cardio-respiratory variables.

Table No: 03. Comparison of pre-and post-data of Akhand Yoga Kaaryshala's Participants in body composition and cardio-respiratory.

Variables	Degree of Freedom	t Value	P Value
Body Weight	19	3.45	0.00*
Triceps Skinfold Width	19	5.11	0.00*
Biceps Skinfold Width	19	2.53	0.02*
Sub-scapular Skinfold Width	19	2.46	0.02*
Supra-iliac Skinfold Width)	19	2.11	0.04*
Calf Skinfold Width	19	3.51	0.00*
Blood pressure Systole	19	3.29	0.00*
Blood pressure Diastole	19	2.22	0.03*
Pulse Rate	19	5.33	0.00*
Vital Capacity	19	-16.37	0.00*

***= significance**
Significance level = 0.05

In table no: 1, shows that the mean score of body weight in pre and post data of the participants is 82.45 and 77.20 respectively and from table no 2, p value is revealed 0.00, which is significant at 0.05 level.
The mean score of triceps skinfold for pre and post data of the participants of is 20.20 and 18.15 respectively and p value is 0.00, which is considered as significant at 0.05 level. The mean score of biceps' fat is 12.40 and 10.90 respectively and p value is found 0.02, which is significant at 0.05 level. The mean score of sub-scapula's fat is25.15 and 22.40 and p value is found 0.02, it is also significant at 0.05 level. The mean score of supra-iliac skinfold is 26.90 and 24.70 respectively and p value is found 0.04, which is significant at 0.05 level. The mean score of calf's fat is 17.65 and 15.25 respectively and p value has shown 0.00, it is found significant at 0.05 level. The mean score of Blood pressure Systole is 125.35 and 120.55 respectively and p value is found 0.00, which is found significant at 0.05 level. The mean score of Blood pressure Diastole is 80.05 and 77.55 respectively and p value is revealed 0.03, it is considered as significant at 0.05 level. The mean score of pulse rate is 79.95 and 74.85 and p value is 0.00 that mean it is significant at 0.05 level. The mean score of vital capacity is 2.45 and 3.10 and p value is 0.00 which is also considered significant at 0.05 level. Above mentioned all variables of the body composition and cardio-respiratory found significant at 0.05 level except body weight which is considered as in-significant at 0.05 level.

DISCUSSION

Yoga has a positive role to maintain the health, physical fitness and over-all well-being. Significant reduction in all parameters of the body composition (body weight, triceps skinfold width, biceps skinfold width, sub-scapula skinfold width, supra-iliac skinfold width and calf Skinfold width) and significant improvement in the cardio-respiratory parameters (blood pressure, pulse rate and vital capacity) have been observed in the present study of experimental group after completion of five (05) months yoga training. Akin findings were made by the different authors, where they got the result after providing yoga training to the participants of the experimental group. Manna I, 2019; Manna I, and Chowdhury M; Na Nongkhai MP, Yamprasert R, Punsawad C, 2021; Rohal M & Bhan R, 2020; Gautam N, Chavan Ramdas Dhanaji And Dr. Karan Chugh, 2022 Mustafa Adem Demirezer and Mürsel Biçer, 2023; All the aforementioned authors have found similar results for the body fat percentage in which they showed that in fat percentage significant reduction has seen that means all the studies supported to the present study. Yoga asanas and pranayamas has a good impact on body fat and cardiorespiratory parameters. Cardiorespiratory variables pulse rate, systole and diastole blood pressure have reduced shows significant improvement, Vital capacity also improved after giving a five months yoga training. Following studies are agreed with the present study in Cardiorespiratory variables pulse rate, systole and diastole blood pressure and Vital capacity S Blessy Selva Arasan, 2018; Emina Panjeta, Mirsad Panjeta, Amela Dervišević, Jozo Ćorić, 2019; Chinmayee Bedekar & Dr. Deepali Hande, 2017; Kim E. Innes and Terry Kit Selfe.

CONCLUSION

It is concluded that yoga asanas and pranayamas training have good impact on body composition and cardiorespiratory functioning. Yoga plays crucial role to maintain health and well-being of an individual. Yoga asanas and pranayamas prevent and control number of communicable and non-communicable diseases, so it is the need of hour to perform yoga asanas and pranayamas on regular basis at least 1 hour/day.

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Conflict of Interest Statement

Authors must declare that there is no conflict between any authors.

REFERENCES

1. Batrakoulis A. (2022, Nov 17). Psychophysiological Adaptations to Yoga Practice in Overweight and Obese Individuals: A Typical Review. Diseases, 10(4), 107, Doi: 10.3390/Diseases10040107. Pmid: 36412601; Pmcid: Pmc9680480.
2. Chinmayee Bedekar & Dr. Deepali Hande. (2017, March). Effect of Yoga on Health Related Physical Fitness, International Journal of Multidisciplinary Research and Developmen, Volume, 4(3), 105-109
3. DemiRezer and M. U. Rsel Biçer. (2023), The Effect of Yoga Exercises on Body Composition and Quality of Life in Sedentary Women Adem, Gaziantep Niversitesi Spor Bilimleri Dergisi Https://Api.Semanticscholar.Org/Corpusid:257383131
4. Dr. Naveen Gautam, Dr. Chavan Ramdas Dhanaji and Dr. Karan Chugh. (2022). A Comparative Review on Impact of Yoga and Physical Exercise on Health, World Journal of Pharmaceutical and Medical Research
5. Dr. S Blessy Selva Arasan. (2018), Effect of Yoga on Cardio Respiratory System and Body Composition of University Male Students. Int J Physiol Nutr Phys Educ 3 (2), 103-105
6. Emina Panjeta, Mirsad Panjeta, Amela Dervišević, Jozo Ćorić. (2019). Effect of Yoga Exercise on Circulatory System. J Yoga & Physio, 8(1), 555726. Doi: 10.19080/Jyp.2019.08.555726
7. Kim E. Innes1, 2 and Terry Kit. (2016). Selfe-Yoga for Adults With Type 2 Diabetes: A Systematic Review of Controlled Trials, Hindawi Publishing Corporation Journal of Diabetes Research Volume, Pages No. 23, Article Id 6979370, Http://Dx.Doi.Org/10.1155/2016/6979370
8. Manna I. (2020). Study The Influence of Yogic Asana on Body Composition and Cardiopulmonary Functions of Adolescent Girls. BLDE Univ J Health Sci, 5, 26-31.
9. Manna I, and Chowdhury M. (2020). Effects of 12 Weeks Yoga Practice on Body Composition and Cardiopulmonary Status of 10–12 Years Female Volunteers. Arch Med Health Sci, 8(208), 14
10. Monika Rohal 1 & Prof. Ranjna Bhan. (2020, October). Effect of Asanas and Pranayamas on General Well-Being Of Senior Secondary School Students Jetir, 7(10)
11. Na Nongkhai Mp, Yamprasert R, Punsawad C. (2021, Aug 25). Effects of Continuous Yoga on Body Composition in Obese Adolescents. Evid Based Complement Alternat Med. 2021:6702767. Doi: 10.1155/2021/6702767. Pmid: 34484400; Pmcid: Pmc8410386
12. Rahul Dev Choudhury & Sukanta Chandra Nath, (2023), The Effects of Yogic Asana Practice on Body Fat Percentage: A Systematic Review, International Research Journal of Humanities And Interdisciplinary Studies, International Research Journal of Humanities And Interdisciplinary Studies
13. S. Saritha & Dr. D. Rajalakshmi. (2019, November). Impact of Asana Pranayamaand Combined Effect on Motor Fitness Body Composition and Emotional Intelligence among High School Girls, Indian Journal of Applied Research, 9(11)
14. Wibowo Ra, Nurámalia R, Nurrahma Ha, Oktariani E, Setiawan J, Icanervilia Av, Agustiningsih D. (2022, Apr 1). The Effect of Yoga on Health-Related Fitness among Patients with Type 2 Diabetes Mellitus: A Systematic Review and Meta-Analysis. Int J Environ Res Public Health, (7):4199. Doi: 10.3390/Ijerph19074199. Pmid: 35409881; Pmcid: Pmc8998732.