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Effect of application of fitness app on body composition parameters of physical activity among sedentary people from Barrackpore city in West Bengal

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Abstract
This research aimed at studying the effect of Google fit app on the body composition components of sedentary peoples and to compare the pre-test and post-test scores of the subjects participating in the experimental study. A group of 20 sedentary peoples were selected from the Barrackpore City W.B. West Bengal where the city was selected using non-probable technique and the subjects were selected by applying snowball sampling method. Three fitness tests along with two paper pencil tests were conducted pre and post fitness app programme for 14thweeks. Descriptive analysis was done for fitness variables viz body composition parameters. To determine the difference between pre-test and post-test, paired sample 't' test, was used. There was a positive effect found between pre-test and post-test. There was significant effect found in all most all variables tested at the end of the experiment. It was also found that subject's body composition parameters improved with the help of physical activity programme using fitness app.

Keywords: fitness app programme, fitness, involvement, body composition. experiment, snowball sampling

Introduction
Everybody wants to be healthy and well, as those are among the very basic needs of human beings (Len and Gough, 1991). Unfortunately, there is plenty of un-wellness among the people living in modern society. In the middle of all the good things brought by the improved living standards, many people suffer from overweight and obesity tress, mental illnesses and sedentary lifestyles, among other issues. The high costs of treatments and therapies and the lack of resources in public health care service have led to a demand for self –care systems to support physical fitness and prevent illnesses.

Among the variety of available physical fitness applications, which includes all kinds of applications for improving eating habits, managing weight, reducing stress-levels, improving sleep, integrating relaxation, improving running, walking, steeping and calories burn capacity etc. There are also applications targeted especially to promote physical activity. Those applications are usually called physical activity application or fitness application. Thousands of commercial applications related to heath and physical fitness are available in the markets, for all the different purposes. Application such as Example of modern physical fitness app: Free apps in Samsung health, Google fit, sleep as, pedometer, lost it, mi- fit, 30 day fit, Nike run club, Rock my Run, women workout, walk mate, calories counter, fitness trainer, running distance runner, run tactic, mind body etc. Payable apps is Just six weeks, Runtastic pedometer, Sleep set, Yoga studio, 30 days fitness, Daily workout, Guru Mann fitness, 7 Minute workout challenge, Beginner fitness, Push up, Total fitness etc.

Physical activity has the positive effects of maintaining optimal weight, promoting positive fallings, and many physiological measurements (blood pressure cholesterol, blood sugar) at healthy levels (Miles, 2007). One of the most evident examples of the effects of a lack of physical activity is being overweight. People need intrinsic motivation towards conducting physical exercise, because physical exercise itself does not necessarily feel good. Particularly not in the beginning. Mobile exercise applications can potentially increase motivation towards physical activity and initiate a change, such as being physically more active.

Physical Fitness
Physical fitness refers to "a set of attributes that related to the ability to perform physical activity" (U.S. Department of Health and Human services, 1996). Physical fitness is the ability of the body systems to work together efficiently to allow people to be healthy and effectively perform activities of daily living (Corbin & Lindsey 2007). Physical fitness can be classified into health-related and skill-related fitness. Health related fitness consists five components: cardio respiratory endurance, muscular endurance, muscular strength, flexibility, and body composition and is determined by a combination of regular activity and genetically inherited ability. The amount of physical fitness ranges is from low to high. On other hand, skill- related fitness divided into six components: agility, balance, coordination, power, reaction time, and speed. In terms of prevention of diseases, the main emphasis of any fitness programs should be placed on the health- related fitness as skill- related fitness is crucial for success in sports and daily life activity and it also contributes to wellness (Hoeger & Hoeger, 2005).

Statement of Problem

The benefits of physical fitness app toward the contribution to overall intrinsic motivation and daily habit change have been studied in a skewed manner. Fewer studies have reported about the effects on motivation and change daily life habit. In this present piece of research the effects of fitness app on intrinsic motivation in sedentary peoples will be studied. Thus proper body fitness and good habit are highly essential for their daily life. Although physical activity programme using fitness app helps for improving body fitness but no study indicates its influence on intrinsic motivation and daily life habits. It was therefore thought desirable to undertake this study "Effect of Application of Fitness App on Body Composition Parameters of Physical Activity among Sedentary People from Barrackpore City in West Bengal"

Significance of the Study

- The study will be beneficial to the sedentary people to improve physical fitness and implementation in daily life habits.
- It will be needful to society to implement the physical fitness apps programme of their society.
- It will be helpful to the policy maker for constructive work and to from fitness app program in society.
- It will be helpful to the physical educator and other researcher to check and implement the mobile fitness apps on their respective students, teachers and other persons.

Objective of the Study

For the research undertaken, the researcher has considered the following objectives.

1. To design and implement the physical activity programme using fitness app.
2. To measure and analyze fitness of participants.
3. To study the day to day habits and effect of physical activity programme using fitness app on it.
4. To measure and analysis body composition parameters of the subjects.

Hypothesis of the Study

H1: There will be significant change in body composition parameters due to physical activity programme using fitness app.

Delimitation of the

1. The study will be delimited to 30-45 years sedentary male of the Barrackpore city in West Bengal.
2. The intervention will be delimited to Google Fit physical fitness app.
3. The experimental period will be delimited to 14thweeks.
4. Weight, Body fat%, Body muscle%, Body age, visceral fat%, resting metabolism through Omron Body Composition HBF-212 Monitor.
5. The subjects will be told not to use in the other fitness app during intervention period.
6. Only android OS4.4 or above mobile set / smart mobile set will be used.

Limitation of the Study

1. The findings of the study will be solely based on subject's response
2. Always require will be carry the mobile set by the subjects.
3. The environmental situation during the period of program implementation will be considered as limitation of the study.
4. Mobile mechanical condition during the period of program, implementation will be considered as limitation.
5. The follow up study of the experimental could not be extended further due to the study of time.
6. The investigator could not conduct the experiment on the large sample due to insufficient management power and limited time.
7. The competence of the fitness app may affect the daily life activity performance; it is controlled by using the Google Fit App throughout the intervention.

Operational Definition of the term used:

Physical Fitness: Physical fitness is considered as capacity of subjects participating in the particular research, which is measured by Beep Test, Harvard Step Test and Omron Body Composition HBF-212 Monitor.

Calories: Calories is a physiological factor which is measured by Beep test and Google fit app, with the help of fitness app the number given by fitness app is consider as calories burn in that day after that session.

Fitness apps: Fitness app is an application that can be downloaded on any mobile device and used anywhere to get fit, which is store in mobile of subjects. Which is used for workout, which records in this fitness app. So that fitness app is considered as fitness app. They can be used as a platform to promote healthy behaviour change with personalized workouts, fitness advive and nutrition plans. Such as muscle gaining, gym coach, endomondo, total fitness, total training, My Fitness Pal, Achivex, Sleep cycle, Charity miles, Strava, Fit Radio, Happify, Ma MPY Run, Lose it, Runkeeper, Fooducate, Pocket Yoga, DietBet, Clam, Fitnoet, Fitpaa etc.

Sedentary People: A sedentary lifestyle is a type of lifestyle involving little or no physical activity. A person living a sedentary lifestyle is often sitting or lying down while engaged in and activity like reading, socializing, watching television, playing video games, or using mobile phone/computer for much of the day.

BMI (Body Mass Index): The body mass index or Quetelet index is a value derived from the mass and height of an individual. The BMI is defined as the body mass divided by the square of the body height, and is universally expressed in units of kg/m2, resulting from mass in kilograms and height in metres. BMI uses the following simple formula to indicate the ratio between weight and height of a person.

BMI = weight (kg)/ height (m) / height (m).

Visceral Fat Level? Visceral fat = fat surrounding internal organs. Too much visceral fat is thought to be closely linked to increased levels of fat in the bloodstream, which can lead to common diseases such as hyper-lipidemia and diabetes, which impairs the ability of insulin to transfer energy from

the bloodstream and using it in cell. In order to prevent or improve conditions of common disease, it is important to try and reduce visceral fat levels to an acceptable level. People with high visceral fat levels tend to have large stomach. However, this is not always the case and high visceral fat levels can lead to metabolically obese. Metabolically obese (visceral obesity with normal weight) represents fat levels that are higher than average, even if a person's weight is at or below the standard for their height.

Skeletal Muscle: Muscle is divided into two types, muscle in internal organs, such as the heart, and skeletal muscle attached to bones that is used to move the body. Skeletal muscle can be increased through exercise and other activity. Increasing the ratio of skeletal muscle means that body can burn energy more easily, which means that it is less likely to turn to fat, and makes it easier to lead an energetic lifestyle.

Resting Metabolism: Regardless of your activity level, a minimum level of caloric intake is required to sustain the body's everyday factions. Known as the resting metabolism, this indicates how many calories you need to ingest in order to provide enough energy for your body to function.

Research Design (Pre – Experimental Design)

This study consists of an experimental design in which researcher made use of one group pre-test—post-test design with the help of this design the effect of treatment is going to be judged by scores of pre-test and post- test.

This experimental research will be carry out by following experimental design.

Pre-test Post-test Equivalent group design

- N= 20 (experimental group)

One Group Experimental Design

O1	X	O2
Pre-test	**using program**	**post-test**

Population

A population is any group of individuals that have one or more characteristics in common that there are interest to the researcher. In this research, the population is all the sedentary people's age range between 30-45 years; from in Barrackpore City of West Bengal will be considered as population of this study.

Sample

The sample is a small population of the population that is selected for observation and analysis. By observing the characteristics of the sample, one can make certain inferences about the characteristics of the population from which it was drawn. In this study the researcher are selected 20 sedentary peoples ranging from 30-45 years in Barrackpore city (West Bengal). With the help of Snowball sampling Method. The whole selected sedentary peoples will be considered as a single experimental group. For this sample physical fitness app (Google Fit) will be used as dependent variable. The researcher has selected one group pre-test post-test single group of 20 sedentary male to be tested before and after the intervention of the Google Fit app. Hence the researcher has selected this pre experiment.

Description of Test Items

1 Height

Equipment used: Marking wall, scale.

Purpose: To measured height.

2 Weight, Body Fat Percentage, Body Muscle Percentage, Visceral Fat Percentage, Body Age, Resting Metabolism and BMI

Equipment used: Omron Body Composition Monitor Model HBF-212 Karada Scan.

Purpose: To measure weight, body fat percentage, body muscle percentage, visceral fat percentage, resting metabolism, and BMI of the subjects.

Methods of data analysis

The data was collected and descriptive tool were used to ascertain the effectiveness of physical activity programme using fitness app. The statistical tools used in this study were simple descriptive tools like mean, median, standard deviation. To find out the difference between the pre-test and post-test, the researcher employed the inferential tool paired sample 't' test. Cross tabulation for non-parametric data analysis. Wilcoxen test is used for comparing pre-test and post-test.

Analysis and Interpretation of Data

Table 1: Summary of Paired Sample 't' Test for Comparing Maximum Hip Circumference

Test	Mean	SD	Correlation	't'	df	Sig.`
Pre-test	95.7	5.20	0.969	10.03	19	0.00
Post-test	92.7	5.43				

1 Description Summary of Paired Sample 't' Test for Comparing Maximum Hip Circumference

The above table 1 reveals descriptive analysis of subjects in hip circumference ratio. They had pre-test were mean of 95.7 and std. Deviation 5.20, similarly for post-test mean was 92.7 and std. Deviation was 5.43. Show the difference between mean of pre and post-test was 3.00. This mean difference was tested with standard deviation was 1.33 and this difference was tested paired sample 't' test were 't' value was 10.03 at the degree of freedom 19. Which was statistically significant at 0.01significant level (p= 0.001). This indicates that physical activity programme using fitness app is useful in reducing of hip circumference ratio of the subjects.

It is seen that the coefficient correlation between the scores of maximum hip circumference pre-test and post-test is 0.969, which shows a high correlation.

Table 2: Summary of Paired Sample 't' Test for Comparing Minimum Hip Circumference

Test	Mean	SD	Correlation	't'	df	Sig.`
Pre-test	86.80	6.96	0.979	7.57	19	0.00
Post-test	84.15	7.48				

2 Description of Summary of Paired Sample 't' Test for Comparing Minimum Hip Circumference

The above table 2 reveals descriptive analysis of subjects in minimum hip circumference ratio. They had pre-test were

mean of 86.80 and std. Deviation 6.96, similarly for post-test mean was 84.15 and std. Deviation was 7.48. Show the difference between mean of pre and post-test was 2.65. This mean difference was tested with standard deviation was 1.57 and this difference was tested paired sample 't' test were 't' value was 7.57 at the degree of freedom 19. Which was statistically significant at 0.01significant level (p= 0.001). This indicates that physical activity programme using fitness app is useful in reducing of minimum hip circumference ratio of the subjects.

It is seen that the coefficient correlation between the scores of minimum hip circumference pre-test and post-test is 0.969, which shows a high correlation.

Table 3: Summary of Paired Sample 't' Test for Comparing Body Weight

Test	Mean	SD	Correlation	't'	df	Sig.`
Pre-test	72.17	8.94	0.997	11.92	19	0.00
Post-test	70.46	8.90				

3. Description of Summary of Paired Sample 't' Test for Comparing Body Weight

The above table 3 reveals descriptive analysis of subjects body weight. They had pre-test were mean of 72.17 and std. Deviation 8.94, similarly for post-test mean was 70.46 and std. Deviation was 8.90. Show the difference between mean of pre and post-test was 1.73. This mean difference was tested with standard deviation was 0.65 and this difference was tested paired sample 't' test were 't' value was 11.92 at the degree of freedom 19. Which was statistically significant at 0.01significant level (p= 0.001). This indicates that physical activity programme using fitness app is useful in reducing body weight of the subjects.

It is seen that the coefficient correlation between the scores of minimum hip circumference pre-test and post-test is 0.997, showing near to high correlation.

Table 4: Summary of Paired Sample 't' Test for Comparing Body Fat %

Test	Mean	SD	Correlation	't'	df	Sig.`
Pre-test	24.67	3.12	0.976	5.64	19	0.00
Post-test	23.80	3.13				

4 Description of Summary of Paired Sample 't' Test for Comparing Body Fat %

The above table 4 reveals descriptive analysis of subjects body fat %. They had pre-test were mean of 24.67 and std. Deviation 3.12, similarly for post-test mean was 23.80 and std. Deviation was 3.13. Show the difference between mean of pre and post-test was 0.88. This mean difference was tested with standard deviation was 0.69 and this difference was tested paired sample 't' test were 't' value was 5.64 at the degree of freedom 19. Which was statistically significant at 0.01significant level (p= 0.001). This indicates that physical activity programme using fitness app is useful in reducing body fat % of the subjects.

As the correlation is very close to 1, it is seen that each and every sedentary people is affected by the program. It is observed that the correlation between pre-test and post-test of body fat %is 0.976, which shows a very high correlation.

Table 5: Summary of Paired Sample 't' Test for Comparing Body Muscle Mass %

Test	Mean	SD	Correlation	't'	df	Sig.`
Pre-test	32.39	1.99	0.892	-6.22	19	0.00
Post-test	33.64	1.84				

5 Description of Summary of Paired Sample 't' Test for Comparing Body Muscle Mass %

The above table 5 reveals descriptive analysis of subjects body muscle mass %. They had pre-test were mean of 32.39 and std. Deviation 1.99, similarly for post-test mean was 33.64 and std. Deviation was 1.84. Show the difference between mean of pre and post-test was -1.26. This mean difference was tested with standard deviation was 0.91 and this difference was tested paired sample 't' test were 't' value was -6.22 at the degree of freedom 19. Which was statistically significant at 0.01significant level (p= 0.001). This indicates that physical activity programme using fitness app is useful in increasing body muscle mass % of the subjects.

As the correlation is very close to 1, it is seen that each and every sedentary people is affected by the program. It is observed that the correlation between pre-test and post-test of body muscle mass %is 0.892, which shows a very high correlation

Table 6: Summary of Paired Sample 't' Test for Comparing Visceral Fat %

Test	Mean	SD	Correlation	't'	df	Sig.`
Pre-test	9.65	3.24	0.991	9.75	19	0.00
Post-test	8.65	3.05				

6 Description Summary of Paired Sample 't' Test for Comparing Visceral Fat %

The above table 6 reveals descriptive analysis of subjects visceral fat %. They had pre-test were mean of 9.65 and std. Deviation 3.24, similarly for post-test mean was 8.65 and std. Deviation was 3.05. Show the difference between mean of pre and post-test was 1.00. This mean difference was tested with standard deviation was 0.46 and this difference was tested paired sample 't' test were 't' value was 9.75 at the degree of freedom 19. Which was statistically significant at 0.01significant level (p= 0.001). This indicates that physical activity programme using fitness app is useful in reducing visceral fat % of the subjects.

It is seen that the coefficient correlation between the scores of visceral fat % pre-test and post-test is 0.997, showing near to high correlation.

Table 7: Summary of Paired Sample 't' Test for Comparing Age and Pre-Body Age

Test	Mean	SD	Correlation	't'	df	Sig.`
Pre-test	33.60	3.05	0.564	-4.35	19	0.00
Post-test	40.85	8.88				

7 Description of Summary of Paired Sample 't' Test for Comparing Age and Pre-Body Age

The table 7 reveals descriptive analysis of subjects age and pre-body age. They had pre-test were mean of 33.60 and std. Deviation 3.05, similarly for post-test mean was 40.85 and

std. Deviation was 8.88. Show the difference between mean of pre and post-test was -7.25. This mean difference was tested with standard deviation was 7.45 and this difference was tested paired sample 't' test were 't' value was -7.25 at the degree of freedom 19. Which was statistically significant at 0.01significant level (p= 0.001). This that physical activity programme using fitness app is useful in reducing body age of the subjects.

As the correlation is very close to 1, it is seen that each and every sedentary people is affected by the program. It is observed that the correlation between pre-test and post-test of age and pre-body age is 0.564, which shows a very high correlation.

Table 8: Summary of Paired Sample 't' Test for Comparing Age and Post-Body Age

Test	Mean	SD	Correlation	't'	df	Sig.`
Pre-test	33.60	8.84	0.579	-3.17	19	0.00
Post -post	38.80	3.70				

8 Description of Summary of Paired Sample 't' Test for Comparing Age and Post-Body Age

The above table 8 reveals descriptive analysis of subjects age and post-body age. They had pre-test were mean of 33.60 and std. Deviation 8.84, similarly for post-test mean was 38.80 and std. Deviation was 3.70. Show the difference between mean of pre and post-test was -5.20. This mean difference was tested with standard deviation was 7.34 and this difference was tested paired sample 't' test were 't' value was -3.17 at the degree of freedom 19. Which was statistically significant at 0.01significant level (p= 0.001). This indicates that physical activity programme using fitness app is useful in reducing body age of the subjects.

As the correlation is very close to 1, it is seen that each and every sedentary people is affected by the program. It is observed that the correlation between pre-test and post-test of age and post-body age is 0.579, which shows a very high correlation.

Table 9: Summary of Paired Sample 't' Test for Comparing Pre &Post-Body Age

Test	Mean	SD	Correlation	't'	df	Sig.`
Pre-test	40.85	8.88	0.991	7.69	19	0.00
Post-test	38.80	8.84				

9 Description of Summary of Paired Sample 't' Test for Comparing Pre &Post-Body Age

The table 9 reveals descriptive analysis of subjects pre- and post-body age. They had pre-test were mean of 40.85 and std. Deviation 8.88, similarly for post-test mean was 38.80 and std. Deviation was 8.84. Show the difference between mean of pre and post-test was 2.05. This mean difference was tested with standard deviation was 1.19 and this difference was tested paired sample 't' test were 't' value was 7.69 at the degree of freedom 19. Which was statistically significant at 0.01significant level (p= 0.001). This indicates that physical activity programme using fitness app is useful in reducing post body age of the subjects.

It is seen that the coefficient correlation between the scores of visceral fat % pre-test and post-test is 0.991, showing near to high correlation.

Major Finding

After analysing the data

1. Post-test proved that there was improved in body composition parameters, those are hip circumference, weight, BMI, body fat%, body muscle%, visceral fat%, body age, and resting metabolism.
2. It is found that the Google fit app daily activity performance of the subjects was improved and maintain this workout through fitness app programme.

Conclusion

1. The fitness of the subjects has improved physical activity programme using fitness app.
2. The physical activity programme using fitness app has shown a positive effect on body mass%, resting metabolism and negative effect on hip circumference, body fat%, weight, and visceral fat%, of sedentary people.
3. Google fit app parameters active duration, heart point, steps, calories burnt, and distance have shown a positive effect.

It is therefore concluded that physical activity programme using fitness app is effective and improves body composition component. of sedentary peoples.

Recommendations

1. In this research, the duration of the experiment was restricted to 14 weeks. Therefore the improvement of performance could not be measured to a large extent. Hence similar study can be conducted to study the effect of long term fitness app programme i.e. two years and more.
2. Age group studied in this research was 30 to 45 years. Father research can be conducted on subjects of below 30 to upper 45 years for long term duration as honing the fitness level and intrinsic motivation will be better at a younger than sedentary age than old age later.
3. In this research, the researcher used tools like knowledge test, observation, questionnaire for data collection. Hence a study can be conducted to study the effect of fitness app programme using interview as the data collection tool.
4. As there were so May peoples interested in participating in this experiment and even many of them started doing follow fitness app programme on their own. Hence the researcher recommends this program to be implemented on a large scale to develop culture of exercise in social environment.

In this research, the researcher used some physical fitness tools such as Beep test, Harvard step test for data collection. Hence a study can be conducted to study the effect of fitness app programme using other physical fitness as the data collection tool.

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