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Effect of application of fitness app on intrinsic motivation 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 Intrinsic Motivation and fitness 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. One fitness tests along with one paper pencil test were conducted pre and post fitness app programme for 14th weeks. Descriptive analysis was done for fitness variable viz cardiovascular endurance paper pencil test viz Intrinsic Motivation. 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, one paper pencil test was given to the subjects for assessing their intrinsic motivation. It was also found that subject's cardiovascular endurance and intrinsic motivation improved with the help of physical activity programme using fitness app.

Keywords: Fitness app programme, Fitness, Intrinsic motivation, cardiovascular endurance, Experiment, Snowball sampling

Introduction

"Health is a state of complete physical mental and social will-being and not merely the absence of disease of infirmity" (WHO, 1946). According to this definition by the World Health Organization, health means overall well-being. The growing incidence of health problems attributed to contemporary lifestyles, and the limited resources of healthcare, has lead several stakeholders to look for alternative preventive healthcare methods. Physical exercise has many good effects for health, but people often lack intrinsic motivation towards it. Smartphone applications can act as intrinsic motivational tools, as they accessible mobile, and have suitable technological abilities. During past few years ago, a large number of mobile exercise applications have been launched and increasingly, fitness and wellness technologies have been researched in the field of human – computer interaction (HCI). However the field lacks a comprehensive overview of the design strategies related to intrinsic motivational exercise a applications. Additionally, research in the field has mostly been conducted in western cultures, and perspectives from the developing world are missing.

Intrinsic Motivation: Intrinsic motivation is derive from intangible factors. For example, someone who plays game for his own physical fitness is relying on intrinsic motivation. A person who plays game for money is extrinsic motivation. When my subject's physical fitness app use for his increasing physical fitness is consider on intrinsic motivation.
Intrinsic motivation is when you do something because you enjoy it or find it interesting. Compare that to Dani, whose reason for running for running involves extrinsic motivation, or doing something for external rewards or to avoid negative consequences. Now, you may think that intrinsic motivation is better than extrinsic motivation and you'd be right up to a point. Studies have shown that people are more likely to sick to a task, invest more time in a task, and be more successful at it if they are intrinsically motivated. However, extrinsic motivation has its place, too. After all, without extrinsic motivation, many of us would never exercise,

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never goto work and never clean our houses. Many days –to-day tasks that are required to live a healthy life are extrinsically motivated. Besides, who doesn't like to be rewarded for what they do?

Statement of Problem
The benefits of physical fitness app toward the contribution to overall intrinsic motivation 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 Intrinsic Motivation of Physical Activity among Sedentary People from Barrackpore City in west Bengal"

Significance of the Study
- The study will be increase intrinsic motivation and daily life habits of physical
- Activity of the sedentary peoples.
- 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 intrinsic motivation of participants.
3. To study the effect of fitness app on intrinsic motivation and physical fitness.

Assumptions
The following assumptions were made by the researcher for conducting the research.
1. It is assumed all the subject has android OS 4.4 or above mobile set.
2. It is assumed that sedentary peoples take active part in the experimental study.
3. It is assumed that the Physical fitness app will be assessing actual daily life activity and habits of the subjects.
4. The sedentary male peoples will take part actively and enthusiastically in the whole program.
5. It is assumed that the subjects are capable for participating in physical fitness app intervention.
6. It is assumed that the effect on dependent variable after experiment will be because of independent variable.

Hypothesis of the Study
The following hypothesis will be stated for conducting the research

H1: There will be significant change in intrinsic motivation become of physical activity programme using fitness app.

H1: There will be significant change in cardiovascular endurance of the subjects due to physical activity programme using fitness app.

Delimitation of the
The researcher has considered the following factors as the delimitation of the study.
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 14th weeks.
4. Psychological, physiological and physical fitness parameter will be delimited to intrinsic motivation, and cardiovascular endurance.
5. The subjects will be told not to use in the other fitness app during intervention period.
6. Only android OS 4.4 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.
8. The researcher has no control over the other activities by the subject.
9. The researcher has no control the Psychological factors of the subjects.

Operational Definition of the term used:
Intrinsic Motivation: Intrinsic motivation refers to behaviour that is driven by internal rewards. In other words, the motivation to engage in behaviour arises from within the individual because it is intrinsically rewarding.

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.

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.
Pre-test Post-test Equivalent group design

- N= 20 (experimental group)

One Group Experimental Design

O1	X	O2
Pre-test	**using program**	**post-test**
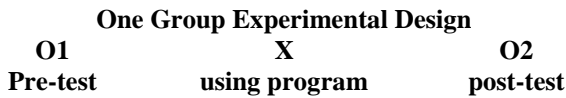
Population
A population is any group of individuals that have one or more characteristics in common that there are interest to the researcher. In this research, the population is all the sedentary people's age range between 30-45 years; from in Barrackpore City of West Bengal will be considered as population 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
The subjects were assembled and informed the purpose of the test. They were instructed to complete different test following standard procedure. They were informed to do their best in different tests. The tests were conducted as follows.

1. Harvard Step Test
Purpose: to measure the cardiac stress test of the subjects.

2. Finger Pulse Oximeter
Purpose: to measure pulse rate of the subjects.

3. Description of Intrinsic Motivation Inventory:
Purpose: to measure the intrinsic motivation 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: Descriptive Analysis of Pre & Post-tests of Intrinsic Motivation

Statistics	Pre Distance	Post Distance
Mean	63.8	139.05
SEM	4.488	1.951
Median	54.5	138.5
SD	20.070	8.727
Minimum	39	125
Maximum	97	160
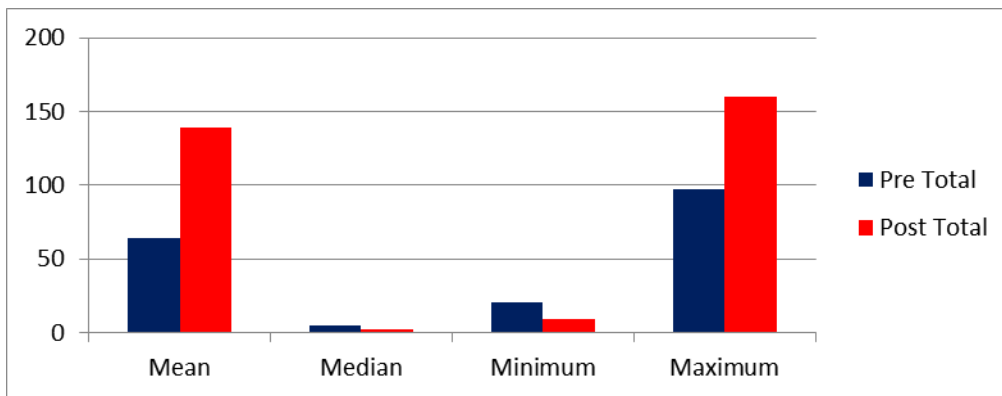
Fig 1: Graphical Presentation of Pre-test & Post-test Mean, Median, Minimum and Maximum of Intrinsic Motivation

1. Description of Descriptive Analysis of Pre & Post-tests of Intrinsic Motivation
From the above table 1 reveals descriptive analysis of sedentary people in Intrinsic Motivation total result. There were 20 subjects tested who had Pre-test mean of 63.80 and std deviation 20.07, similarly to post-test mean is 139.05 and std. Deviation was 8.72. Median of pre-test 54.50 and for post-test was 138.50. Minimum mean, Maximum mean and Standard Error of Mean of pre-test 39, 97 and 4.48. Similarly post-test minimum mean, maximum mean and standard error of mean were 125, 160 and 1.95. It is seen that the mean of post-test greater than that of pre-test of Intrinsic Motivation of the subjects. As compared to mean of post-test there was an improvement in pre-test mean intrinsic motivation.

Table 2: Paired Two Samples Test of Pre-test and Post-test Total Intrinsic Motivation of the Subjects

	Mean	SEM	SD	Pearson Correlation	df	't'	Sig.
Pre Total	63.8	4.488	20.07	-0.263	19	-14.081	0.00
Post Total	139.05	1.951	8.727				

Description of Paired Two Samples Test of Pre-test and Post-test Total Intrinsic Motivation of the Subjects

The above table 2 consists of score analysis of experimental group total Intrinsic Motivation pre-test and post-test through which conclude the difference between mean of pre-test and post-test was 75.25. This mean difference was tested with standard deviation was -12.35 and this difference was tested paired two sample 't' test were 't' value was -14.08 and critical value was 2.093. df = 19. Which was statistically significant at 0.05 significant level (p = 0.001).

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 correlation between pre-test and post-test of intrinsic motivation is -0.263, which shows a very high correlation.

Table 3: Descriptive Analysis of Harvard Step Test after 5 min Exercise Pulse Rate on Pre & Post-tests

Statistics	After 5 min Pre-test Pulse rate	After 5 min post-test Pulse rate
Mean	164	154
SEM	3.138	2.907
Median	162	152
SD	14.035	12.999
Minimum	145	135
Maximum	188	176
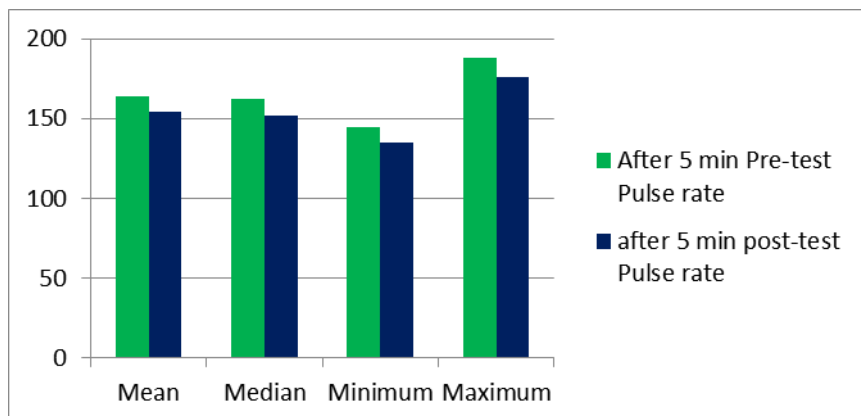
Fig. 2: Graphical Presentation of Pre-test & Post-test Mean, Median, Minimum and Maximum of after 5 min Exercise Pulse Rate

Description of Statistical Analysis of after 5 min Exercise Pulse Rate

The table 3 reveals descriptive statistics of sedentary people in Harvard Step Test. There were 20 subjects tested who had Pre-test mean of after 5 minute exercise pulse rate 164 and std deviation 14.03, similarly to post-test mean is 154 and std. Deviation was 12.99. Median of pre-test 162 and for post-test was 152. Minimum mean, Maximum mean and Standard Error of Mean of pre-test 145, 188 and 3.13. Similarly post-test minimum mean, maximum mean and standard error of mean were 135, 176 and 2.90. It is seen that the mean of post-test less than that of pre-test of after 5 minute exercise. As compared to mean of pre-test there was improvement in post-test mean.

Table 4: Summary of Pair Sample 't' test of after 5 min Exercise Pulse Rate for the Comparison of Pre-test and Post-test

| After 5 min Exercise	Mean	SEM	SD	Pearson Correlation	df	't'	Sig.
Pre Total	163.85	3.14	14.04	0.952	19	9.88	0.00
Post Total	154.35	2.9	12.99				

Description Summary of Pair Sample 't' test of after 5 min Exercise Pulse Rate for the Comparison of Pre-test and Post-test

Form the table 4 the pre-test and post-test performance was compared using the paired sample 't' test. Harvard Step Test after 5 min exercise pulse rate pre-test mean, SD, and SEM was 163.85, 14.04, and 3.14. Similarly post test mean, SD and SEM was 154.35, 12.99, and 2.90. The 't' value for after 5 min exercise pulse rate was found to be 9.88 for degree of freedom 19. Which was statistically significant at 0.05 significant level (p = 0.001). This indicates that experimental programme is useful in reducing of pulse rate of the subjects.

As the correlation is very close to 1, it is seen that each and every sedentary people is affected by the physical activity programme using fitness app. It is observed that correlation between pre-test and post of after 5 min exercise pulse rate is 0.958, which shows very high correlation.

Table 5: Descriptive Analysis of Harvard Step Test after 6-6.30 min Resting Pulse Rate on Pre & Post-tests

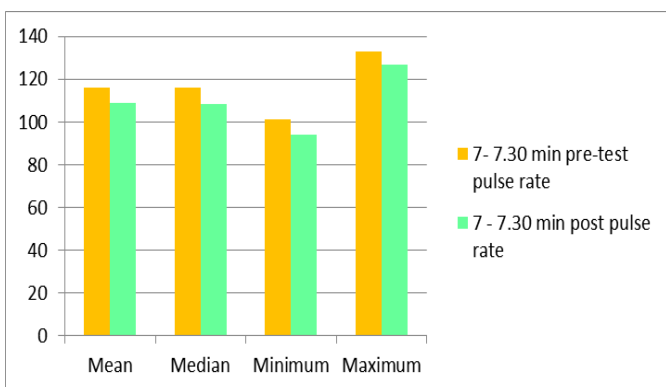| Statistics	6-6.30 min pre-test pulse rate	6-6.30 min post-test pulse rate
Mean	131	123
SEM	2.298	2.144
Median	130.5	123
SD	10.277	9.588
Minimum	117	109
Maximum	152	145
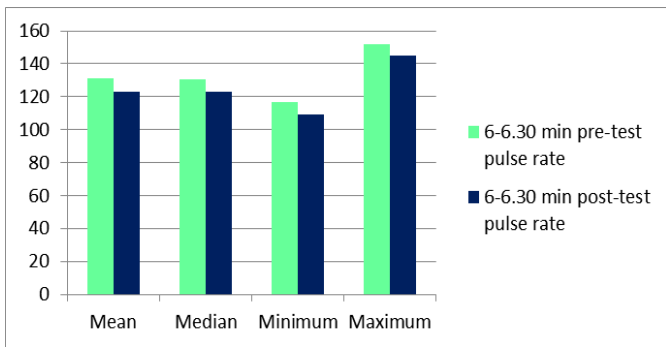
Fig 3: Graphical Presentation of Pre-test & Post-test Mean, Median, Minimum and Maximum of 6-6.30 min Pulse Rate

Description of Statistical Analysis of after 6-6.30 min Resting Pulse Rate

The table 5 reveals descriptive statistics of sedentary people in Harvard Step Test. There were 20 subjects tested who had Pre-test mean of after 6 to 6.30 minute resting pulse rate 131 and std deviation 10.28, similarly to post-test mean is 123 and std. Deviation was 9.59. Median of pre-test 130.5 and for post-test was 1123.Minimum mean, Maximum mean and Standard Error of Mean of pre-test 117, 152 and 2.29. Similarly post-test minimum mean, maximum mean and standard error of mean were 109, 145 and 2.14. It is seen that the mean of post-test less than that of pre-test of after 5 minute exercise. As compared to mean of pre-test there was improvement in post-test mean.

Table 6: Descriptive Analysis of Harvard Step Test after 7-7.30 min Resting Pulse Rate on Pre & Post-tests

Statistics	7- 7.30 min pre-test pulse rate	7 - 7.30 min post pulse rate
Mean	116	109
SEM	1.797	1.755
Median	116	108.5
SD	8.035	7.848
Minimum	101	94
Maximum	133	127

Fig. 4: Graphical Presentation of Pre-test & Post-test Mean, Median, Minimum and Maximum of 7-7.30 min Pulse Rate

Description of Statistical Analysis of after 6-6.30 min Resting Pulse Rate

The table 6 reveals descriptive statistics of sedentary people in Harvard Step Test. There were 20 subjects tested who had Pre-test mean of after 7 to 7.30 minute resting pulse rate 116 and std deviation 9.59, similarly to post-test mean is 109 and std. Deviation was 7.85. Median of pre-test 116 and for post-test was 108.5. Minimum mean, Maximum mean and Standard Error of Mean of pre-test 101, 133 and 1.79. Similarly post-test minimum mean, maximum mean and standard error of mean were 94, 127 and 1.75. It is seen that the mean of post-test less than that of pre-test of after 5 minute exercise. As compared to mean of pre-test there was improvement in post-test mean.

Table 7: Descriptive Analysis of Harvard Step Test after 8-8.30 min Resting Pulse Rate on Pre &Post-tests

Statistics	8 - 8.30 min Pre-test pulse rate	8 - 8.30 min post-test pulse rate
Mean	106	102
SEM	1.823	1.723
Median	106	102
SD	8.152	7.704
Minimum	89	86
Maximum	126	118
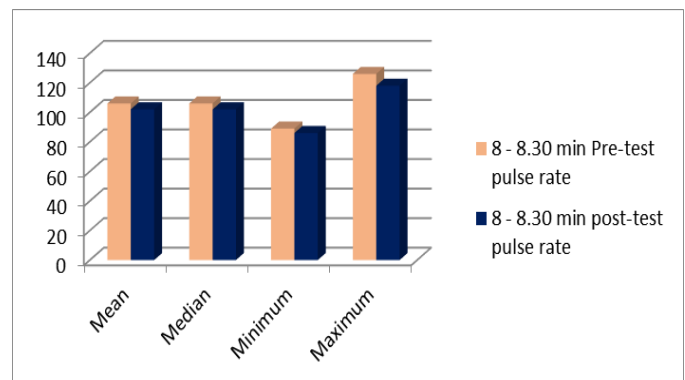
Fig. 5: Graphical Presentation of Pre-test & Post-test Mean, Median, Minimum and Maximum of 8--8.30 min Pulse Rate

7 Description of Statistical Analysis of after 8-8.30 min Resting Pulse Rate

The above table 7 reveals descriptive statistics of sedentary people in Harvard Step Test. There were 20 subjects tested who had Pre-test mean of after 8 to 8.30 minute resting pulse rate 106 and std deviation 8.52, similarly to post-test mean is 102 and std. Deviation was 7.70. Median of pre-test 106 and for post-test was 102. Minimum mean, Maximum mean and Standard Error of Mean of pre-test 106, 126 and 1.82. Similarly post-test minimum mean, maximum mean and standard error of mean were 86, 118 and 1.72. It is seen that the mean of post-test less than that of pre-test of after 5 minute exercise. As compared to mean of pre-test there was improvement in post-test mean.

Table 8: Summary of Pair Sample 't' test of 8-8.30 min Resting Pulse Rate for the Comparison of Pre-test and Post-test

| 8-8.30 min Pulse rate	Mean	SEM	SD	Pearson Correlation	df	't'	Sig.
Pre Total	106.15	1.82	8.15	0.980	19	-10.56	0.00
Post Total	102.25	1.72	7.14				

Description of Summary of paired sample 't' test

Form the table 8 the pre-test and post-test performance was compared using the paired sample 't' test. Harvard Step Test 8-8.30 min pulse rate pre-test mean, SD, and SEM was 106.15, 8.15, and 1.82. Similarly post test mean, SD and SEM was 102.25, 7.14, and 1.72. The 't' value for 8-8.30 min pulse rate was found to be 10.53 for degree of freedom 19. Which was statistically significant at 0.05 significant level (p = 0.001). This indicates that physical activity programme using fitness app is useful in reducing of pulse rate of the subjects.

As the correlation is very close to 1, it is seen that each and every sedentary people is affected by the physical activity programme using fitness app. It is observed that correlation between pre-test and post of after 8-8.30 min resting pulse rate is 0.980, which shows very high correlation.

Major Finding

i. It is found that there was increase in performance of fitness variable in the post-tests i.e. cardiovascular endurance tested by Harvard step test.

ii. It is found that the intrinsic motivation of the subjects was improved through fitness app programme.

Conclusion

i. The physical activity programme using fitness app has shown a positive effect on the cardiovascular endurance of the sedentary peoples.

ii. Intrinsic motivation of the subjects is improved through physical activity programme using fitness app.

iii. The fitness of the subjects has improved physical activity programme using fitness app.

Recommendations

i. 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.

ii. 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.

iii. 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.

References

1   Ashtekar RP. Effect of Suryanamskar Breathing Exercise and Omkar Chanting on Swimming Performance of Swimmers Aged 8 to 16 years (Unpublished Doctor of Philosophy Thesis). Chandrashekhar Agashe College of Physical Education, Pune, Maharashtra, 2015.

2   Bansode SV. Effect of Yogaand Aqua Exercises Training Programme on Performance and Selected Phycho-Physiological Profiles of Basketball Players (Unpublished Doctor of Philosophy Thesis). Chandrashekhar Agashe College of Physical Education, Pune, Maharashtra, 2013.

3   Beep Test Apps – Topend Sports: Retrieved from – https://www.topendsports.com.

4   Direito A, Jingn Y, Maddison R, Whittaker R. Apps for Improving Fitness and increasing Physical Activity Among Young People: The AIMFIT Pragmatic Randomized Controlled Trial. Retrieved from-https://preprints.jmir.org/preprint/4568., 2015.

5   Garrett HE, Woodworth RS. Statistics in Psychology and Education. New Delhi, 14th: Nav prabhat Printing press. 2011.

6   Kratzke C, Cox C. "Smartphone Technology and Apps: Rapidly Changing Health Promotion." International Electronic Journal of Health Education. 2012; 15(2):72-82.

7   Kumar R. Research Methodology A Step by Step Guide for Beginners, 4th Ed. New Delhi: Sage publications India Pvt. Ltd., 2014.

8   Rodney ML. To Study the Effect of Strength Training on the Kicking Distance of Under-14 Players (Unpublished Masters Dissertation). Chandrashekhar Agashe College of Physical Education. Pune, Maharashtra., 2013.

9   Sabdra AM, Lestie AM. Foundation of Psychological Testing A Practical Approach. New Delhi: Saga Publication, 1983, 361.

10 Suinn RM. Psychology in Sports Methods and Application. New Delhi Delhi: Surjeet Publications., 1989.

11 Suresh T. A Comparative study of Physical Fitness Component of Kho-Kho Players and Selected Foreign Games Players of Under 14 Boys (Unpublished Masters Dissertation). Chandrashekhar Agashe College of Physical Education. Pune, Maharashtra., 2007.

12 https://www.researchgate.net/publication/284887211.

13 https://doi.org/10.1016/i.amepre.2014.10.010.

14 http://aisel.aisnet.org/pacis2013/185 .https://www.ncbi.nim.gov/pmc/articles/pmc4376122/ 15/05/2017

15 https://www.ncbi.nim.nih.gov.

16 https://hal.inria.fr/hal-01381187.

17 http://www.ncbi.nlm.nih.gov.

18 https://www.google.co.in/jamanetwork.com/journals/jam cardiology/fullarticle/2592965 14/05/2017

19 https://www.tut.fi/tutcris. 14/12/2017