

# ROLE OF SHORT SIX WEEKS HOME BASED AEROBIC EXERCISES IN PATIENTS WITH POST PERCUTANEOUS TRANSLUMINAL CORONARY ANGIOPLASTY (PTCA)

POOJA SINGH<sup>1</sup>

<sup>1</sup>Department of Physiotherapy, <sup>2</sup>Cardiovascular & Pulmonary Department,  
Krishna Institute of Medical Sciences, College of Physiotherapy, Secunderabad

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**Abstract** - To examine the cardiovascular adaptations and functional capacity (6 min walk test, rate of perceived exertion, resting heart rate, maximal heart rate, systolic and diastolic blood pressure, mean arterial blood pressure) by giving Aerobic Exercises in Post Percutaneous Transluminal Coronary Angioplasty patients. The need for the study is to know the efficiency of aerobic exercises in post percutaneous transluminal coronary angioplasty (PTCA). To evaluate whether the patient can perform the aerobic exercises with -out any difficulty. To evaluate the effects of aerobic exercises on an individual with post PTCA and lead a better life after post PTCA.

**Key Words:** Percutaneous Transluminal Coronary Angioplasty (PTCA); Resting Heart Rate (RHR); Maximal Heart Rate (MHR); Blood Pressure (BP); Systolic Blood Pressure (SBP); Diastolic Blood Pressure (DBP); Mean Arterial Blood Pressure (MRBP) cardiovascular diseases (CVD); Coronary heart diseases (CHD).

## 1.Introduction

Cardiovascular diseases are the leading cause of death globally this is true in all areas of the world. Cardiovascular diseases (CVD) especially coronary heart diseases (CHD) are epidemic in India. Coronary artery diseases (CAD) develops when the major blood vessel that supply your heart with blood, oxygen and nutrients (coronary arteries) become damaged or diseased cholesterol -containing deposits (plaque)in your arteries and inflammation are usually to blame for coronary artery disease when plaque builds up, they narrow your coronary arteries, decreasing blood flow to your heart. Percutaneous coronary angioplasty intervention (PCI) is effective and established treatment for clinically significant coronary artery disease. Angioplasty is a procedure we use to restore the blood flow through the arteries, certain conditions will cause the blood flow to slow; making it difficult for the body to receive necessary oxygen (O<sub>2</sub>) and nutrients; angioplasty open up the blocked artery so that the blood can flow smoothly. Percutaneous transluminal coronary angioplasty (PTCA) is performed to open blocked coronary arteries caused by coronary artery diseases (cad) and to restore arterial blood flow to the heart tissue with- out open heart surgery.

## 2. Aim of the Study:

The aim of the study is to evaluate the role of six weeks home based aerobic exercises in the patients with post percutaneous transluminal coronary angioplasty.

## 3.Methodology:

**Sampling:** Convenient sampling; A type of non- probability sampling method where a sample is taken from the group of people who are easy to contact and easy to reach

**Study Design:** Randomised control trial; A study in which people are allocated at random to receive one of several clinical interventions, RCT seeks to measure and compare the outcomes after participants receive interventions.

**Sample Design:** Repeated periodical study; It is a type of study which is done periodically in periods of time with repeated procedure

**Sample Size:** 40 healthy subjects of post PTCA of both the genders will be randomly selected patients will be enrolled in a single or one group. Their age ranges from 40 -60 years and there BMI range from 30-35 kg/m<sup>2</sup> initially all participants medically examined prior to participation all the subjects were explained about the aerobic exercises and there medical history will be taken to know about the general condition physical activity and current medications 6 min walk test was done and they are divided into single group and these patients are taken with both pre and post- test values

## Inclusion Criteria:

In this study we are all using patients of Percutaneous Transluminal Coronary Angioplasty of both the genders that is male and female. The age group between 40-60 years is used for the study.

## Exclusion Criteria:

Subjects with following conditions are excluded from the study: Cardiac failure; Valvular surgery; Myocardial infarction; Left ventricular ejection fraction; Uncontrolled arrhythmia; Severe hypertension; Uncontrolled diabetes

## 4. Programme Protocol:

Before conducting the treatment session all the subjects had to visit the physiotherapy department to be familiarized with the treatment to be cooperative during the treatment session. The demonstration of treatment session was done for all the subjects before starting the treatment

The demonstration of exercise session was done for all the subjects, and they were asked not to wear tight clothes during exercise session

Participants will be enrolled in one or single group. Patients who underwent post percutaneous transluminal coronary angioplasty (PTCA), are referred to physiotherapy department by their concerned cardiologist.

A study group of patients with post percutaneous transluminal coronary angioplasty (PTCA) is taken where both pre-test

value and post-test value are calculated on the same and single group, and the results are calculated.

The training of aerobic exercises protocol is explained and perform mild exercises like walking, Jogging, paddling, combined arm and leg cycling to the patients on the first day and ask to continue the same above exercises for next six week program, under supervision and the patients are asked to visit for every two weeks as a part of follow-up program to evaluate whether the patients performing the aerobic exercises properly, if not, train the patients again with proper aerobic exercise program and now ask the patients to meet after two weeks, and follow the same protocol as mentioned above till six weeks .Exercise sessions were performed three times per week for six weeks, alternate days.

Cardiac rehabilitation combined with patients perceived exertion rating 11-13 (fairly light to somewhat hard) on the Borg Scale (Borg, 1982).

The program includes 16 periods of exercise training and six education sessions on cardiovascular risk factors, lifestyle modification measures and the Pathophysiology of atherosclerosis.

The exercise component of the program was conducted according to national foundation of Australia, Australian Cardiac Rehabilitation Association (NHFA and ACRA; 2004) guidelines.

The exercise session was divided into 50 minutes:

Warm – up: 10 minutes

Aerobic exercises: 30 minutes

(prescribed exercises: walking, power walking, jogging, bicycling, paddling, combined arm and leg cycling, rowing)

Cool down: 10 minutes

Tools for the study: BP Apparatus, Pulse Oximeter, Stethoscope, Stopwatch.

## 5. Outcome Measures:

6-Min Walk Test:

It measures a distance that a patient can walk on a flat and a hard surface in a period of 6 minutes the distance covered time is 6 min is cycled as outcome by which we can compare the functional capacity

Systolic and Diastolic Blood Pressure:

The amount of pressure in the arteries during the contraction of heart is called systolic pressure. The amount of pressure in the arteries when the heart is at rest that is in between the beats is diastolic pressure

Mean Arterial Blood Pressure:

It is the average pressure in a patient artery during one cardiac cycle it is considered as a better indicator of perfusion to vital organs than systolic blood pressure.

MAP = systolic BP – diastolic BP

Resting Heart Rate:

It is the number of times the heart beats per minute while at the complete rest it is the indicator of physical fitness of your body. Resting heart rate decreases as aerobic capacity increases.

Rate of Perceived Exertion:

It is measured by BORG rating scale which calculates the physical activity integrity level and how hard the person feel while working.

Maximal Heart Rate:

It is calculated by 220- age which is the upper limit of what your cardiovascular system can handle during physical activity

## 6. Statical Analysis:

Data analysis was performed. Alpha value was set as 0.05. Descriptive statistics was performed to find out mean, standard deviation, range, minimum, maximum for the demographic variable and outcome variables. Paired t test was used to find out significant difference within group for 6MWT, RHR, MHR, SBP, DBP, MAP Wilcoxon signed rank sum test was used to find out significant difference within group for RPE. Microsoft excel, word was used to generate graph and tables.

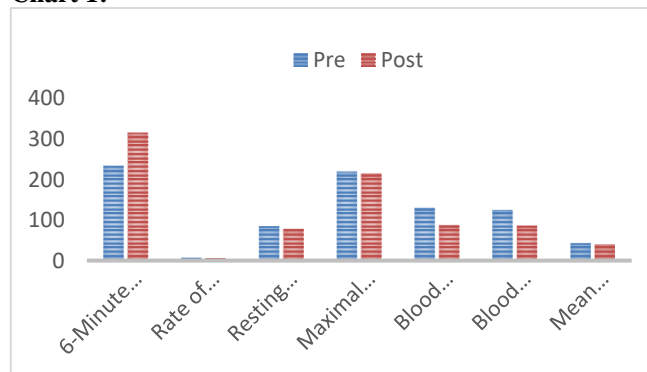
**Table -1: Mean deviation**

Variable	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
Age	20	40	60	52.05	6.53	42.66
6-Minute Walk Test pre	240	120	360	233.13	67.47	4552.16
6-Minute Walk Test post	240	150	390	315.25	65	4225.58
Rate of Perceived Exertion pre	3	6	9	7.45	1.22	1.48
Rate of Perceived Exertion post	1	6	7	6.28	0.45	0.2
Resting Heart Rate pre	11	80	91	85.1	3.08	9.48
Resting Heart Rate post	10	75	85	78.2	2.6	6.78
Maximal Heart Rate pre	17.4	211.6	229	219.04	5.65	31.96
Maximal Heart Rate post	20	208	228	214.96	6.56	42.98
Sys Blood Pressure PRE	38	110	148	130.03	9.62	92.64
Sys Blood Pressure sys POST	38	60	98	88.08	9.75	95.1
Dia Blood Pressure PRE	30	110	140	124.45	10.04	100.82
Dia Blood Pressure POST	28	70	98	86.2	5.74	32.98
Mean Arterial Blood Pressure pre	28	30	58	43.25	7.55	57.01
Mean Arterial Blood Pressure post	38	20	58	40	12.19	148.72

**Table -2: Alpha Value**

Sl.No:	Variables	Pre	Post	P-value
1	6-Minute Walk Test	233.13±67.47	315.25±65.00	<0.0001
2	Rate of Perceived Exertion	7.45±1.22	6.28±0.45	<0.0001
3	Resting Heart Rate	85.10±3.08	78.20±2.60	<0.0001
4	Maximal Heart Rate	219.04±5.65	214.96±6.56	<0.0001
5	Blood Pressure systolic	130.03±9.62	88.20±9.75	<0.0001
6	Blood Pressure Diastolic	124.45±10.04	86.20±5.74	<0.0001
7	Mean Arterial Blood Pressure	43.25±7.55	40.00±12.20	>0.124

**Chart 1:**



**Fig -1**

## 7. CONCLUSIONS

From the above discussion we can conclude that there is significant improvement. The study was conducted on 40 subjects between age group of 40 -60 years. Cardiopulmonary parameters in terms of pulse rate, systolic and diastolic blood pressure and maximal heart rate, resting heart rate, mean arterial blood pressure were measured before and after exercise session. The data was tabulated and subjected to the statistical analysis. After analyzing the data following inferences were drawn. There was a significant increase in the rate of perceived exertion, maximal heart rate, resting heart rate, systolic and diastolic blood pressure, mean arterial blood pressure after entire aerobic exercise session. Thus, aerobic exercise is significant in improving cardiovascular adaptations and functional capacity in the patients with post-PTCA

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