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ORIGINAL ARTICLE

A COMPARATIVE STUDY BETWEEN AEROBIC EXERCISE AND ONSHORE EXERCISE ON SEVERITY OF PAIN AND QUALITY OF LIFE IN WOMEN WITH VARICOSE VEINS

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ABSTRACT

Background of the study: Varicose Veins are subcutaneous twisted superficially dilated veins, often in blue or dark purple colour for at least larger than 3mm in size most commonly located on lower extremity. Especially for females due to overweight, prolong period of standing or sitting, age etc. Regular exercise will stimulate blood circulation, improve muscle strength and help to prevent a varicose vein. The purpose of the study is to investigate effect of Aerobic Exercise and Onshore exercise on severity of pain and quality of life in woman with Varicose Veins. **Methodology:** It was an experimental study with comparative pre and post-test type. The study was conducted at physiotherapy outpatient department ACS medical college & hospital, Chennai. The subjects were 30 females with 35-55years of age, with deep veins thrombosis were selected and divided into two groups (Group-A, Group-B). The duration of study was for 8 weeks, 30mins day, with four sessions. Pre and post measurement will be taken by using visual analogue scale (VAS) and SF-36 questionnaire scale short form health survey grading the level of varicose veins. Group-A were given Aerobic exercises. Group-B were given Onshore exercises. **Result:** On comparing pre-test & post-test between Group A & group B on visual analogue scale & SF-36 questionnaire score shows highly significant difference in mean values at $P > 0.001$. **Conclusion:** The study concluded that onshore exercise is effective in the treatment of varicose Veins compared to Aerobic exercise.

Keywords: Varicose Veins; Aerobic exercises; Onshore exercises; SF36; Visual Analogue Scale

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INTRODUCTION

The venous system of lower limb is composed of superficial veins and deep veins. Superficial veins are long and short saphenous veins; deep veins are femoral, popliteal veins, peroneal veins, anterior tibial veins and posterior tibial veins. The purpose of veins in leg is to direct the blood flow one way toward heart only, which has seen in normal veins. About 90% of all venous blood leaves the leg by deep veins through action of "muscular compression" this system term as calf pump or secondary heart of the leg¹⁻².

Varicose veins become dilated twisted and tortures veins it is 3mm larger than in size located on the calf muscles of leg which manifest it as a widening, protrude veins. The main symptom of varicose veins is pain, oedema, and ulceration with heaviness of leg, postural discomfort and cramps of lower extremity.³⁻⁵

Varicose is a one of the chronic venous diseases that mainly occur in the lining of the veins at the bottom of calf muscles and causes a high blood flow accumulation and swelling in the leg due to there is an increase in venous pressure or weakness in the valves of veins is an important factor that develop a varicose diseases. There will be some reduction of collagen and easting with properties of substances of many changes like skin colour; texture and the significant cause of morbidity have a negative impact of quality of life (QOL)^{7, 8}.

Aerobic exercises like running, cycling, jogging may lead to decrease the blood pressure in the legs there by can reduce the varicose veins and tread mill also can prevent varicose veins, the mild lymphatic drainage technique would

provide benefit to patient suffering from chronic venous insufficiency⁹.

Onshore exercise can reduce the risk of chronic venous disease to promote the venous blood return and improve the muscle strength and the venous hemodynamic by calf pump functions in upright position and can reduce the risk of secondary condition.¹ Onshore exercises involve mountain climbers while in push up position slowly bring each of your leg up and touch your knee to elbow do it for 10 times of each leg. Further single legs stand with eyes closed for 30seconds. Ankle dorsiflexion and plantar flexion can be included.

Pain severity was assessed by using visual analogue scales (VAS) and their quality of life (QOL) using SF-36 short form health survey questionnaire scale can be assessed

METHODOLOGY

It was an experimental study with comparative pre and post-test type. The study was conducted at physiotherapy outpatient department ACS medical college & hospital, Chennai. The subjects were 30 females with 35-55years of age, with deep veins thrombosis were selected and divided into two groups (Group-A, Group-B). The duration of study was for 8 weeks, 30mins day, with four sessions. Pre and post measurement will be taken by using visual analogue scale (VAS) and (SF-36) questionnaire scale short form health survey grading the level of varicose veins. Group-A were given Aerobic exercises. Group-B was given onshore exercises.

Patients with lower limb fracture, any neuropathy condition, Ulcers in lower limb, Pelvic tumour, Pregnancy, Thrombo-phlebitis, Peripheral vascular diseases were excluded from the study. Materials used for the study

were questioner form, pain assessment form and chair.

Outcome measures: Pain and quality of life were measured by Visual Analogue Scale (VAS) SF-36 questionnaire scale

Visual Analog Scale (VAS): Used to assess the pain score of the patients

SF-36 Questionnaire Scale: The Short-Form-36 health survey. The questions were combined with mental and physical functioning and overall health - related-quality of life.

Procedure: The purpose of the study is to compare the aerobic exercise and onshore exercise to reduce severity of pain and improve quality of life in women with varicose veins. For these study 30 subjects rarely selected these subjects were selected based on inclusion criteria and some of the Subjects have been excluded from the study based on exclusion criteria. subjects were divided in to 2 groups. Group A subjects consists of 15 received aerobic exercise and group B subjects onshore exercise regular exercise will improve blood circulation and muscle strength

Group- A (Aerobic Exercise)

Aerobic exercise is given for 8 weeks to improve cardiovascular efficiency and strengthen the muscles, ligaments, tendons and bones and also help to decrease anxiety and stress.

Walking or Running: Walking or running for 20mins.

Bicycling: Cycling for 5mins or leg lift lying on your back lift leg on air bending then knee pedal them slowly both the leg at once or alternatively.

Lunges: 5Min stand with leg apart step forward slow bend the knee and make sure to keep knee directly to the ankle hold it slowly strengthen the legs and back to original position repeat with other leg

Calves: Slowly raise yourself upon your toes and then lower yourself back repeat this 10-15 times with a help of chair support

Group-B (Onshore Exercise)

Onshore exercise Were given for 8 weeks onshore exercise are great for building cardio endurance, core strength and Improve upper body strength and blood circulation to the involved joints relax muscles and stimulate tactile receptors through the skin and reduce the pain severity'

Single Leg Stance: (Marching in place): Lift your knee high and swing your arm hold it for 3-5 seconds for each leg.

Mountain climbers: While in push up position slowly bring each of your leg to elbow do it for 10sec for each leg.

Elevation Of Leg: Legs are elevated for 45 – 90degree angle supported in skin blancher for 2-3mins elevated down 5-10mins and then flat on the bed 10mins.

Data Analysis: The collected data were tabulated and analyzed using both descriptive and inferential statics. All the parameters were assessed using statistical package for social science (SPSS) version 24. Paired t-test was adopted to find the statistical difference within the groups & independent t-test (student t-Test) was adopted to find statistical difference between the groups.

#VAS	GROUP – A		GROUP - B		t-Test	df	Significance
	MEAN	S. D	MEAN	S. D			
PRE TEST	7.46	.639	7.33	.617	.581	28	.566*
POST TEST	4.33	.617	3.46	.743	3.47	28	.000***

(*-P > 0.05), (**- P < 0.001)

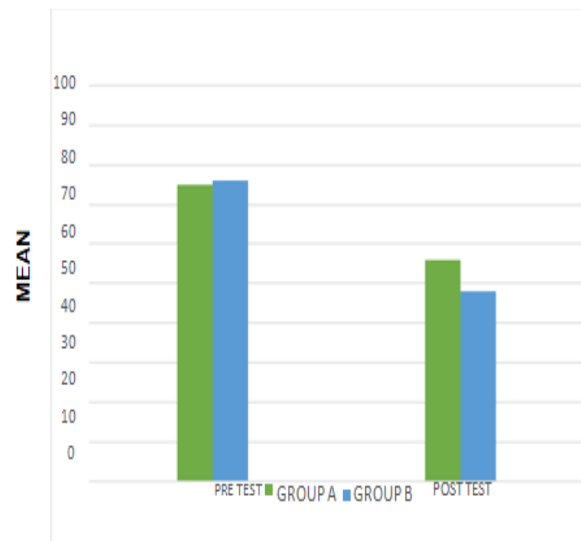
Table 1: Comparison of Visual Analogue Scale score between Group A & Group B in pre and post test.

The above table reveals the Mean, Standard Deviation (S.D), t-test degree of freedom (df) and p-value between (Group A) & (Group B) in pre-test and post-test weeks. This table shows that there is no significant difference in pre-test values between Group A & Group B (*P > 0.05). This table shows that statistically highly significant difference in post-test values between Group A & Group B (***-P < 0.001).



COMPARISON OF VISUAL ANALOG SCALE BETWEEN GROUP- A AND GROUP- B IN PRE AND POST TEST

Graph 1: Comparison of Visual Analogue Scale between group- A & group- B pre test & post test values



Graph 2: Comparison of SF-36 questionnaire scale Score between Group A & Group B in pre and post test values

#SF-36	#GROUP – A		#GROUP- B		t-Test	df	Significance
	Mean	S.D	Mean	S.D			
Pre Test	76.06	7.99	76.00	4.38	-.226	28	.822*
Post Test	56.20	5.36	48.46	5.84	3.77	28	.000***

(* - $P > 0.05$), (** - $P < 0.001$)

Table 2: Comparison of SF-36 questionnaire scale Score between Group A & Group B in pre and post test values

The above table reveals the Mean, Standard Deviation (S.D), t-test, degree of freedom(df) and p-value between (Group A) & (Group B) in pre test and post test weeks.

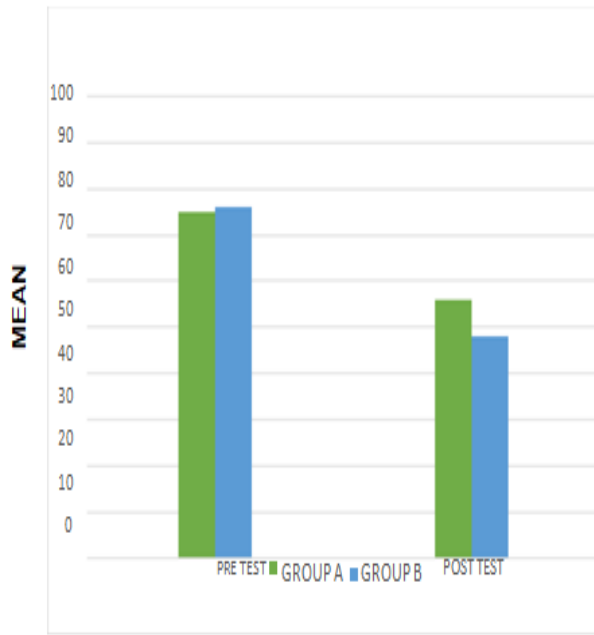
This table shows that there is no significant difference in pre test values between Group A & Group B ($*P > 0.05$).

This table shows that statistically highly significant difference in post test values between Group A & Group B ($***-P < 0.001$)

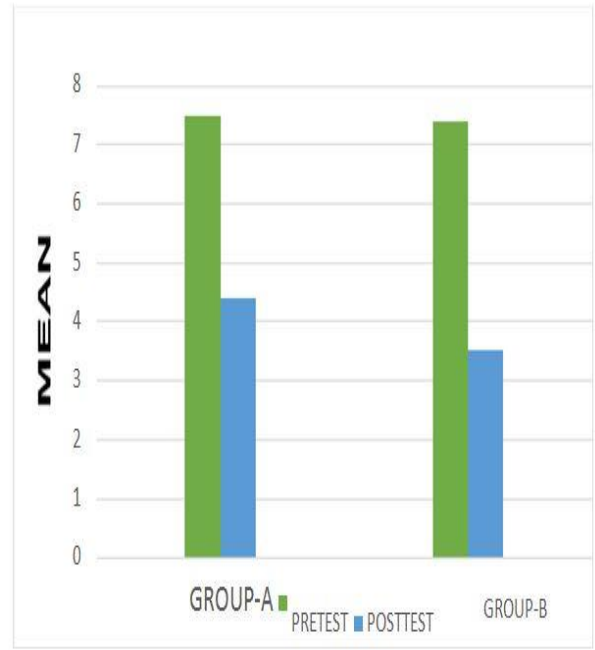
Comparison of Sf-36 Questionnaire scale score between Group- A and Group- B in pre and post test

#VAS	PRE TEST		POST TEST		t-TEST	Significance
	MEAN	S.D	MEAN	S.D		
GROUP A	7.46	.639	4.33	.617	12.25	.000***
GROUP B	7.33	.617	3.46	.743	23.40	.000***

Table 3: Comparison of Sf-36 Questionnaire scale score between Group- A and Group- B in pre and post test



Graph 3: Comparison of SF-36 questionnaire scale Score between Group A & Group B in pre and post test values



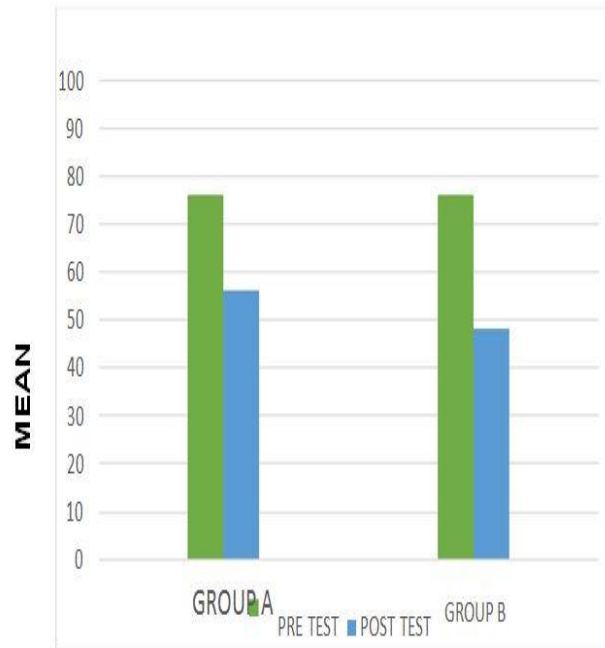
Graph 4: Comparison of visual analog scale between group- A & group- B pre test & post test values

#SF-36	PRE TEST		POST TEST		t-TEST	Significance
	MEAN	S.D	MEAN	S.D		
PRE TEST	76.06	7.99	56.20	5.36	13.28	.000***
POST TEST	76.0	4.38	48.46	5.84	15.17	.000***

(***- P < 0.001)

Table 4: Comparison of SF -36 Questionnaire Scale Score Between Group A& Group B in Pre and Post Test Values

The above table reveals the Mean, Standard Deviation (S.D), t-value, p-value between pre test and post test within Group A & Group B There is a statistically highly significant difference between pre test and post test values within Group A & Group B (***-P < 0.001)



Graph 5: Comparison of Sf-36 Questionnaire Scale Score within Group- A and B between Pre & Post Test

RESULTS

On comparing the mean values of Group A & Group B visual analog scales score, it shows significant decreases in post test mean values but (Group B onshore exercises) shows 3.46 which has the lower mean value is effective than (Group A - aerobic exercises) 4.33 at P < 0.001 hence null hypothesis is rejected

On comparing the mean values OF Group A & Group B on SF-36 questionnaire score it shows

significant decreases in the post test mean values but (Group B on shore exercises shows 48.46 which has the lower mean value is effective than (Group A aerobic exercise) 56.20 at P > 0.001 hence null hypothesis is rejected.

On comparing the pre test & post test with Group A & group B on visual analogue scale, SF-36 questionnaire score shows highly significant difference in mean values at P > 0.001.

DISCUSSION

Since varicose veins are prevalent in society and even mostly occurs to women, it is due to pregnancy, obesity, sex, gene, etc., the study examined the impact period of comparing aerobic and onshore exercises on severity of pain and quality of life in women with varicose veins¹⁰.

varicose veins are common cause of the leg pain which, may describe pain as heaviness (or) deep ache and it also varying degrees of pain other issues of pain as described in their body mainly lymphatic system is a network of vessels so the pain interface with all the activities of the women¹¹.

A study shows that to preserve physical and mental function at early stage and also prolonged life expectations can reduce risk of many Chronic Venous diseases, therefore the result showing that 4 weeks of onshore exercises had a positive effect P < 0.001 on reducing pain and improve the daily activities of women¹²⁻¹³.

Regular exercises can improve blood circulation to the involved joints, relax muscles and stimulate the tactile receptor through the skin and reduce the pain severity. The result of the study shows an improvement in the pain level and their functional ability in both A & B

groups, and there is significant difference between the two groups for benefit group B (Onshore exercises).

Taking as group A (Aerobic exercises) with VAS scale and SF-36 questionnaire scale and Group B (onshore exercises with VAS and SF-36 questionnaire scale. A study performed 30 patients with varicose veins who were followed up for 4 weeks with 20 to 30 minutes of moderate intensity exercises. A day can help to reduce activity limitations increase roll playing and thus improve quality of life well being.

Ethical Clearance: Ethical clearance has obtained from Faculty of Physiotherapy, DR.MGR. Educational and Research Institute, Chennai to conduct this study with reference number: C-35/ PHSIO/IRB/2019-20 dated 07/01/2020.

Conflict of interest: The author reported no conflict of interest to conduct and publish this article.

Funding: The researchers had self financial support to conduct this research.

CONCLUSION

The study was concluded that there is an improvement in both groups but when groups compare to mean value of group B (onshore exercise) is more effective than group A.

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