ORIGINAL ARTICLE

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

Sri Lakshmi Moses¹, Arunselvi. J ², Sasibala. K³

Authors:
²Assistant professor, Faculty of physiotherapy, Dr. MGR Educational and research institute, Deemed to be University, Chennai, India
³BPT Internee, Faculty of physiotherapy, Dr. MGR Educational and research institute, Deemed to be University, Chennai, India

Corresponding Author:
¹Assistant professor, Faculty of physiotherapy, Dr. MGR Educational and research institute, Deemed to be University, Chennai, India. Mail id: srilakshimoses@gmail.com

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

Received on 29th April 2021, Revised on May 10th 2021, Accepted on 18th May 2021
DOI:10.36678/IJMAES.2021.V07I02.002
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 leg. 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.

Varicose veins 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). 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 insufficiency.

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. 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 35-55 years 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
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 | .581         | 28 | .566* |
| PRE  | 7.46      | .639      | 7.33   | .617 | .581         | 28 | .566* |
| TEST |           |           |        |      | .581         | 28 | .566* |
| POST | 4.33      | .617      | 3.46   | .743 | 3.47         | 28 | .000***|
| TEST |           |           |        |      | 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).

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 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        |
| POST TEST | 76.0     | 4.38      | 48.46  | 5.84         | 15.17        |

(*** - 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)

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 veins.

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 women.

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 women.

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.

REFERENCES

1. Mitchel P. Goldman, et al. Prevalence of varicose veins and chronic venous insufficiency in general population. 1999; Vol.50; pp-153.
2. Tqiaq, C. Liu, Fran. The impact of Gastrocnemius muscle cell changes in chronic venous insufficiency. 2005; 30(4); 430-6.
3. Bringard, R. Denis, S. Perrey. Effect of compression tights on calf muscle oxygenation and venous pooling during quiet resting in supine and standing position. 2006; 46(4); 548-554.
4. Oagu, D. Baker, AM Seifalian effect of graduated compression stock on limb during in patient with venous insufficiency January. 2004; 12(1):69-76.
5. Rhysj Morsis, PHD, John .P. Woodcock et.al. Intermittent pneumatic compression or graduate Compression stocking for DVT Prophylaxis. 2010; 251(3):393-6.
6. Bjorn Folkow Ulf Haglund Mats Jodal et.al. Blood flow in the calf muscle of man during rhythmic exercises. 1971; 81(2); 157-163.
7. Markos kolanizakis,Garry tew J, John Saxton et.al., Effects of supervised exercise training on lower-limb cutaneous microvascular reactivity in adults with venous ulcers. Eur J Appl Physiol. 2018; 118(2); 321–329.
8. Rute Sofia Dos Santos Crisóstomo, et al. Manual lymphatic drainage in chronic venous disease: a duplex ultrasound study, Phlebology; 2014; 29(10); 667-76.
9. Esra Dogru Huzmeli , Cemlale, Iyad Fansa et.al., dancing more than a therapy for patient venous insufficiency and safety. 2020; 28(2); 189-195.
10. Michel Augusto dos Santos aquina, Flaviade Jesus Leal, Renatca Cardoso et.al., analyzing the effect of aquatic exercise which improving quality of life and reducing pain with Chronic venous diseases. 2016; 15(1); 27-33.
11. Abeer Yamany, Bassant Hamdy PT. Sequential compression therapy improves venous blood flow and reduces in pain. 2016; Vol 28(7); 1981–1987.
12. Michel Augusto Dos Santosaquina, Flaviade Jesus Leal, Renatca Cardoso et.al analyzing the effect of aquatic exercise which improving quality of life and reducing pain with chronic venous diseases. 2016; Vol 38; 942-946.

13. Ryszard Julinski Malgorzotasochan, ludmila Sit Ko et.al. Nordic walking training improves venous blood and normalizes body composition to reduce the chronic venous diseases risk factor. 2015; Vol 45(1); 113-122.

Citation:
Sri Lakshmi Moses, Arunselvi. J , Sasibala. K. A comparative study between aerobic exercise and onshore exercise on severity of pain and quality of life in women with varicose veins. ijmaes; June 2021; 7 (2); 985-993.