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# The effectiveness of dance therapy on pain in patients with venous insufficiency

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**Abstract:** Chronic venous insufficiency (CVI) is a condition that occurs when the venous wall and/or valves in the leg veins are not working effectively, making it difficult for blood to return to the heart from the legs. Exercise is a conservative treatment option which gives a potential of health benefits and also improves healing outcomes for people with venous leg ulcers. Dance therapy is an effective method for various disease. This study aimed to figure out the effects of dance therapy on pain of CVI patients. 40 patients were found to be available for this study and assigned to either the control group or the therapy group. Patients in control group received only medical treatment. Patients in dance therapy group received dance therapy in addition to medical treatment. 20 Patients in the dance therapy group had 3 times a week, for 5 weeks, totally 15 sessions of therapy, at Mustafa Kemal University Hospital. No differences between groups were observed in the pain ( $p>0.05$ ). There was significantly difference in therapy group between pre and post-treatment results of rest and activity of VAS but in control group only activity score was significant ( $p<0.05$ ). We found that dance therapy has positive effects on pain.

**Keywords:** dance, therapy, venous insufficiency, pain

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## **Introduction**

When the venous wall and/or valves in the leg veins are not working effectively chronic venous insufficiency (CVI) occurs, and this results in difficulty for blood to return to the heart from the legs. Approximately one third of men and women aged 18–64 years suffer from varicose veins and chronic venous insufficiency (Evans et al., 1999; Beebe-Dimmer et al., 2004; Gloviczki et al., 2009). Dance has been used therapeutically for thousands of years for its positive effects on all ages of people and various diseases (Ritter et al., 1996; Koch et al., 2007).

Dance therapy may support patient's wellbeing. This study aims to figure out the effects of dance therapy on pain with chronic venous insufficiency disease. Subjects with CVI were recruited for this trial from cardiovascular surgery clinic. Demographic data and pain level were recorded.

## **Subjects**

Inclusion criteria were that patients that age between 18-60 years, who had evidence of venous incompetence demonstrated by physical examination or Doppler ultrasound examination with at least one significant reflux (of more than 1-second duration in a standing position) in the superficial, deep and/or perforator veins. Patients who had or planned to have surgical endovascular treatments were excluded.

## **Procedure and intervention**

A number of 40 patients were found to be available for this study and randomly assigned to either the control group or the therapy group. Patients in control group received only medical treatment. Patients in dance therapy group received dance therapy in addition to medical treatment. 20 Patients in the dance therapy group had 3 times a week, for 5 weeks, totally 15 sessions of therapy, at Mustafa Kemal University Hospital. After performing 3 sessions of dance therapy, each for 45 minutes, done with the supervision of a physiotherapist. The remaining sessions were performed as a home-based exercise program by given video. The patients were followed with phone calls to control the regularity of given dance program. Post-treatment assessments were done at the end of the 15<sup>th</sup> session.

## **Dance Therapy**

Dance therapy as a combination of proprioceptive neuromuscular facilitation (PNF) exercise patterns combined with dance movements, diaphragmatic breathing exercises and breath retraining. The patterns were done with a folk and enjoyable, music.

## **Medical Treatment**

Medical treatment includes Diosmin (450 mg) + hesperidin (50 mg) that is a semisynthetic and oral phlebotropic drug used in the treatment of venous disease, and used as 1000 mg total dose daily.

To figure out the effects of dance therapy on CVI; following assessments were done to each patient before the treatment and after the 15th session. Visual Analog Scale (VAS) was used to measure the intensity of pain felt during activity and rest (Myles et al., 1999). Patients marked their pain intensity on a 100-mm horizontal line, in which 0 expresses no pain and 100 mm expresses maximum pain the patient felt.

**Statistical Analysis**

Statistical analysis was performed by using statistical SPSS Package Program, version 18. To explore the treatment effects in each two groups Wilcoxon Non Parametric Test; compare two treatment Mann-Whitney U Test was performed. A type I error level of 5 % was used to infer statistical significance.

**Results**

We screened 46 patients for this prospective trial funded by the TUBITAK 2209-A between September 2014 and July 2015. Participants who had an objective evidence of chronic venous insufficiency (CVI), as determined by duplex ultrasound scanning (reflux or scarring), were included. Six participants were dropped out from the study.

40 subjects age’s between 16-58 (38.55±12.12) were included in the study. Twenty of them were in therapy (39±11.58), 20 were in control (38.10±12.93) group.

The pain decreased 0.8 points in rest and 2.05 points in the activity of the therapy group. But in the control group, the pain only 0.60 points in rest and 1.25 points in activity decreased. Clinically the therapy group had more positive effects on the pain. But it was not statistically significant (table 1).

Table 1. Clinical results of analyses between groups

		Pre-Treatment				Post-Treatment			
		Therapy Group	Control Group			Therapy Group	Control Group		
		X±SD	X±SD	z	p	X±SD	X±SD	z	p
VAS	Rest Pain	2.30±2.36	2.90±3.49	-0.198	0.843	1.50±2.06	2.30±3.41	-0.119	0.906
	Activity Pain	5.80±2.87	5.25±3.22	-0.572	0.568	3.75±2.17	4.00±3.35	-0.055	0.956

Table 2. Clinical results of intragroup

		Therapy Group		Control Group	
		Pre-post		Pre-post	
		p	z	p	z
VAS	Rest Pain	0.036*	-2.962	0.098	-1.653
	Activity Pain	0.003*	-2.962	0.005*	-2.795

Intra group results were shown in table 2. There was significantly difference in therapy group between pre and post-treatment results of rest and activity of VAS but in control group only activity score was significant (p<0.05).

## **Discussion**

Dance therapy is a conservative treatment option which gives a potential of health benefits and also improves healing outcomes for people with CVI. This study aimed to figure out the effects of dance therapy on patients with chronic venous insufficiency disease. We found that dance therapy has positive effects on pain.

Walking exercises are very important to get the best results from any form of compression therapy. So the exercises is a beneficial treatment method for CVI (Klyszcz et al., 1997; Gloviczki et al., 2009). PNF exercises were included in our therapy, PNF patterns were made by standing and reciprocal (plantar and dorsal flexion). So the PNF exercises provided pump of calf.

We combined PNF patterns with dance movements. The patients made these exercises accompaniment of the enjoyable folk music. This enjoyable program supported patient positively and the rest and activity pain decreased in therapy group.

There is an important muscular "pump" in the legs. The calf muscle is the responsible muscle for venous return. With each step the calf muscles contract and venous circulation increased. Loss of the normal calf muscle pump will result in swelling of the leg because of a decrease in venous return. Structured exercise required dorsal and plantar flexion of the foot such walking to strengthen calf muscles may improve calf muscle function and the activity of the pump<sup>1</sup> (Gloviczki et al., 2009; Roghani et al., 2013, Song et al., 2014). In our dance therapy exercises included dorsal and plantar flexion of the foot and we think these exercises increased the venous return and so the pain decreased in pain and activity.

Many studies suggest that aerobic exercise can promote positive changes in endocrine system<sup>2</sup> (Song et al., 2014). The endocrine system is an important balance factor for the body. So the patients should make exercises to support the venous system. Especially in up to date treatment, methods that save the patient from surgical intervention are the popular methods. We combined dance and exercises and found positive aspects of this method.

Two of the studies reported that exercise program provided a decrease in pain and edema (Klyszcz et al. 1995; Hartmann et al., 1997). Our study's results are compatible to the literature.

"Superficial veins can thrombose, result in painful thrombophlebitis and localized cellulitis. Deep venous thrombosis may lead to the development of venous claudication, a bursting pain affecting the buttocks, thighs, or legs when walking, requiring rest and leg elevation to achieve symptomatic relief" (Wittens et al., 2015).

We found that all the patients that included in the study had pain in rest and activity. And dance therapy that included leg elevation had positive effects on pain. When the venous circulation was better, the symptoms such pain relaxed.

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## Web-sites sources

<sup>1</sup> <http://vascular-disease.org>

<sup>2</sup> <http://vascular-disease.org/flyers/chronic-venous-insufficiency-flyer.pdf> (accessed in 2016)