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ORIGINAL ARTICLE

# Effect of a Mixed Kinesio Taping—Compression Technique on Quality of Life and Clinical and Gait Parameters in Postmenopausal Women With Chronic Venous Insufficiency: Double-Blinded, Randomized Controlled Trial

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**Abstract**

**Objective:** To investigate the short-term effect of a mixed Kinesio taping (KT) model on range of ankle motion (ROAM), gait, pain, perimeter of lower limbs, and quality of life in postmenopausal women with chronic venous insufficiency (CVI).

**Design:** Double-blinded, randomized controlled trial.

**Setting:** Clinical setting.

**Participants:** Consecutive postmenopausal women (N = 130; mean age ± SD, 65.44±14.7y) with mild CVI. No participant withdrew because of adverse effects.

**Intervention:** Participants were randomly assigned to either (1) an experimental group to receive a mixed KT-compression treatment following KT recommendations for gastrocnemius muscle enhancement and functional correction of the ankle, and adding 2 tapes to simulate traditional compression bandages (no KT guidelines); or (2) a placebo control group for sham KT. Both interventions were performed 3 times a week during a 4-week period.

**Main Outcome Measures:** ROAM, gait, pain, perimeter of right and left lower limb, and quality of life were assessed at baseline and 48 hours posttreatment.

**Results:** Quality of life was better in the intervention group by a mean of 8.76 points (95% confidence interval [CI], 4.96−12.55). The experimental group also showed significant pre-/posttreatment improvements in both lower limbs in gait dorsiflexion ROAM (95% CI, 1.02−2.49), cadence (95% CI, 3.45−1.47), stride length (95% CI, 21.48−10.83), step length (95% CI, 1.68−6.61), stance phase (95% CI, 61−107), and foot (95% CI, .56−.92) and malleolus (95% CI, 1.15−1.63) circumference. None of these variables were significantly modified in the placebo group. Both groups reported a significant reduction in pain.

**Conclusions:** Ankle dorsiflexion during gait, walking parameters, peripheral edema, venous pain, and quality of life remain improved in patients with CVI at 1 month after mixed KT-compression therapy. KT may have a placebo effect on pain perception.

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Chronic venous insufficiency (CVI) is characterized by persistent lower limb venous hypertension[1] that can increase calf muscle deterioration and produce, among other symptoms, pain, a

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Disclosures: none.

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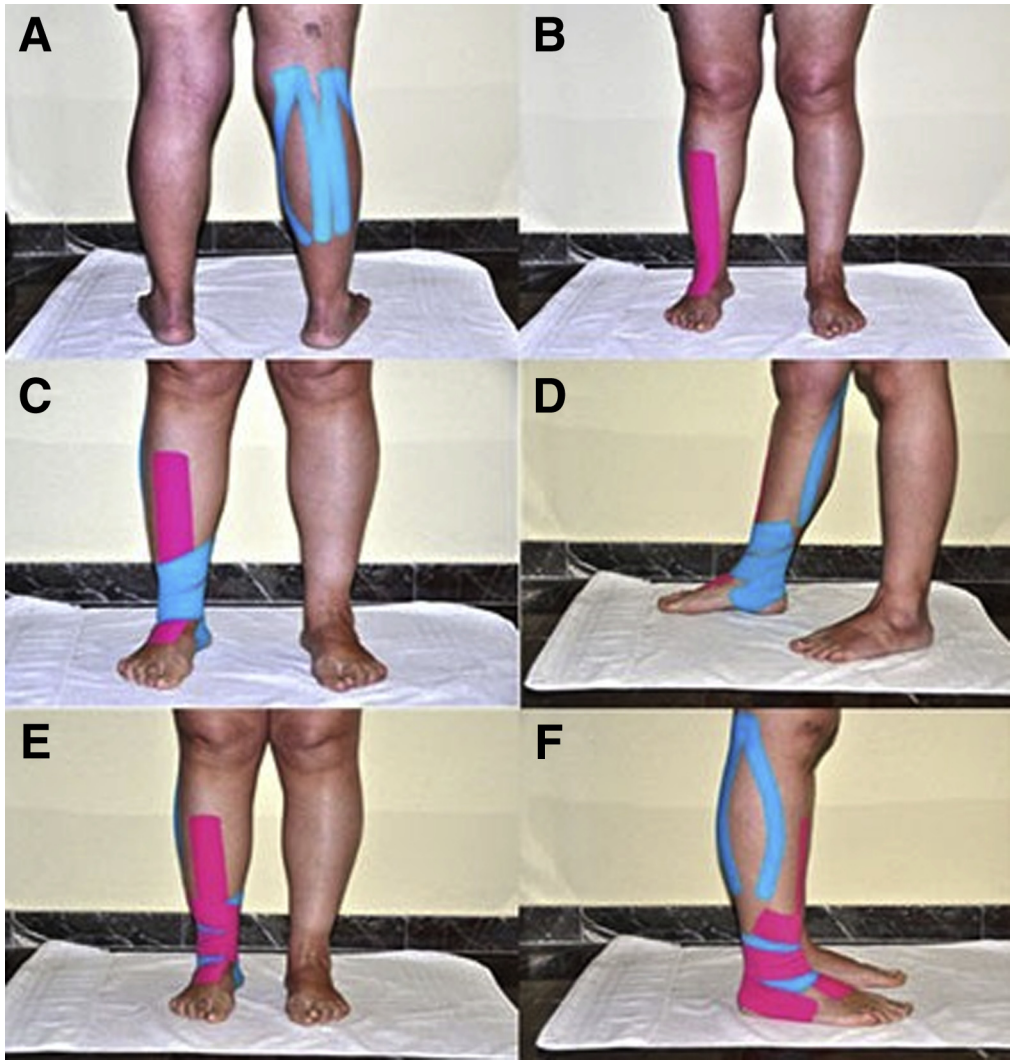


**Fig 1** KT application in experimental group. KT Y-shaped strips are placed on gastrocnemius muscle (A) with origin to insertion direction at tensions ranging from 15% to 50%, following KT guidelines. The I-strip is placed to facilitate dorsal flexion movement of the ankle (B); the anchors were attached to the middle third of the tibialis anterior muscle and at the level of the third metatarsal on the foot dorsum, making a 50% tension in accordance with KT recommendations. The compression in the ankle were applied throw 2 malleolar taping at 50% tension. The first tape was anchored (C, D) to the inner part of the middle third of the foot and taken behind the internal malleolus and then around the external malleolus in a spiral up to the lower third of the tibia. The application of the second tape (E, F) was the same but in the inverse direction; it was adhered to the outer part of the middle third of the foot and taken behind the external malleolus and then around the external malleolus in a spiral up to the lower third of the tibia.

***List of abbreviations:***

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| **ANCOVA** | **analysis of covariance** |
| **C1** | **telangiectases or reticular veins** |
| **C2** | **varicose veins** |
| **C3** | **edema** |
| **CIVIQ-20** | **Quality of Life Questionnaire in Chronic Lower Limb Venous Insufficiency** |
| **CVI** | **chronic venous insufficiency** |
| **KT** | **Kinesio taping** |
| **LLL** | **left lower limb** |
| **RLL** | **right lower limb** |
| **ROAM** | **range of ankle motion** |
| **VAS** | **visual analog scale** |

perception of heaviness, cramps, restless leg syndrome, edema, and painful pruritus.[2] The association between chronic venous disease symptoms in the lower extremities[3] and cardiovascular risk factors in middle-aged postmenopausal women has been described, increasing the negative impact on quality of life and reducing life expectancy.[4-6]

The impairment of calf muscle and range of ankle motion (ROAM) restrictions in patients with CVI leads to an insufficient return of venous blood flow in the lower limbs.[7-10] Thus, the characteristics of patients with CVI that can contribute to edema and other leg symptoms include an altered walking gait and a reduction in general mobility.[11-13] Hence, vascular physical treatments focus on achieving improvements in these parameters.

Rehabilitation programs in venous disease (eg, walking and leg exercises to improve calf muscle pump and ankle mobility,