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Article

Physiotherapy Intervention in the Treatment of Patients with Venous Ulcers: A Delphi Panel Results

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Abstract: Background/Objectives: Venous ulcers is the most common complication of all ulcers of the lower limbs that occurs in patients with chronic venous insufficiency. The treatment of venous ulcers is multidisciplinary, with physiotherapy intervention serving as an adjuvant therapy in the management of these wounds. This study aims to investigate physiotherapeutic interventions for the management of venous ulcers; **Methods:** Exploratory and descriptive study using the Delphi method. The interventions were derived from a systematic review of the literature and presented to a panel of experts for evaluation. The panel comprised 12 experts in wound care, and two rounds of analysis were conducted. A quantitative analysis was performed to assess the level of agreement in responses, while qualitative analysis was applied to the experts' comments; **Results:** In the first round, the consensus varied between 80% to 100% within the answers, and in the second round it ranged from 83,3% to 100%. In the second round, all interventions obtained at least 80% consensus. The intervention includes the use of compression therapy and therapeutic exercise: resistance training, aerobic exercise, stretching, balance training, and the use of a vibrating platform. **Conclusions:** Physiotherapy can help as an adjuvant therapy to a specific local treatment of venous ulcers. The main intervention includes therapeutic exercise and the use of compression therapy.

Keywords: physical therapy; venous leg ulcers; varicose ulcers; therapeutic exercise; compression therapy; Delphi survey

1. Introduction

Venous ulcers (VUs) are defined as a full-thickness skin defect, most frequently in the lower leg and ankle region, that are a result of chronic venous insufficiency and venous hypertension [1,2]. VUs usually appears at the malleolar part on the medial and lateral sides of the ankle. However, they can also appear on the supra-malleolar and infra-malleolar areas of the leg and foot [2,3]. They are wounds that are difficult to heal, with a high recurrence rate. The three-month healing rate is estimated at 40%, and up to 80% of patients experience a recurrence within three months after healing [1–3]. VUs also significantly decrease quality of life since these wounds can be painful, and malodorous [1,2], and results in social isolation and depression [2]. On the other hand, we know that the wound treatment (dressing changes) increase workload to the health professionals [4].

According to the clinical practice guidelines of the *Society for Vascular Surgery* and the *American Venous Forum*, the treatment of VUs should be provided by a multidisciplinary team [5]. These teams may include a wound care specialist, vascular surgeon, nurses, physiotherapists, and other healthcare professionals to develop a customized treatment plan that is most effective for each individual patient [6,7].

The management of a VUs includes the standard care of chronic wounds that includes local treatment, and also compressive therapy and strategies to improve the venous system. Adjuvant therapies include nutritional balance and supplementation, diet, physical rehabilitation that includes exercise and improving blood circulation with pharmacologic treatment [2,3]. Even with appropriate

treatment, a VU may take 6 to 12 months to heal, with a high risk of recurrence in the following year [3].

The clinical practice guidelines of the *Society for Vascular Surgery* and the *American Venous Forum* describes physiotherapy as a Grade 2, Level B evidence, with supervised active exercise recommended to improve muscle pump function and reduce pain and edema in patients with VUs [5]. However, it is not included in the guideline as an adjuvant treatment for the healing of VUs. Some reports demonstrated that exercise programs focused on the resistance training of the calf muscle and range of motion exercises for the ankle/foot are the most effective at increasing the VU healing rate, since they promote venous return from the lower leg through the active calf muscle contraction and ankle mobility with a normal range of motion. In addition, they are also more likely to avoid an ulcer recurrence. This intervention is described as an adjunctive treatment to standard care [2,8]. Medeiros et al. (2025) published a systematic review of literature (PROSPERO Registration No. CRD42020200042) that demonstrates the different skills and competences that physiotherapist's have regarding the treatment of VUs. The review concluded that therapeutic exercise and electrotherapy are physiotherapy modalities that also prove to be an asset as an adjuvant therapy in the healing process when combined with standard care [9]. Also, a recent systematic review with meta-analysis reported that exercise had a positive effect on VU healing, range of ankle mobility compared with the control groups [8]. Although the evidence is still relatively weak, there is proof of the importance of physical therapy in improving the healing rate of wounds, such as VUs [2,3].

Given the complexity of ulcer treatment, the wide-ranging repercussions they cause, and the limited scientific evidence on physiotherapy's role in managing VUs, there is a need to explore ways to optimize physiotherapy interventions for VUs through non-invasive methods. This study, therefore, poses the following research question: "What are the physiotherapeutic interventions for the management of VUs?".

2. Materials and Methods

2.1. Research Design and Prospective Methodology

This article is structured following the STROBE guidelines and is part of a larger study investigating physiotherapeutic interventions for the treatment of VUs and diabetic foot ulcers. Given that the data sources and results were independently collected and categorized by wound type, this article specifically focuses on the findings related to physiotherapeutic interventions for VUs. These results have not been previously reported in any other paper from the broader study.

This study is an exploratory and descriptive design, that investigates an area with limited knowledge [10], as no systematic physiotherapeutic intervention management for treating VUs was identified. It also has a qualitative methodology using the Delphi method, a technique that synthesizes the perspectives of experts geographically dispersed [11,12]. In this method, experts answer to a series of surveys independently to achieve consensus [12], typically requiring agreement levels between 50% and 80%, depending on the study type [13]. Since a systematic literature review has already been conducted, expert consensus in this area is now essential.

2.2. Participants

A non-probabilistic, snowball effect method was selected, given the specific and small population of interest [13]. In Portugal, there are few physiotherapists working explicitly in wound treatment, as well as other professionals on multidisciplinary wound prevention and treatment teams. This approach was therefore deemed the most appropriate for identifying professionals qualified to join the expert panel. Experts were identified through the research team, by the professors of the Master's in Physiotherapy program at the University of Aveiro, and communication was established with Portuguese national entities representing physiotherapists.

The panel of experts was selected based on the following criteria: a) be a doctor, nurse or physiotherapist who provides wound care; b) have experience of at least 5 years with ulcers,

preferably DFUs; c) agree to participate in the study. Exclusion criteria: a) be a researcher with no experience in the area of ulcers.

The research team initially selected participants by compiling a list of individuals who met the inclusion criteria. This initial list included 11 experts who were directly contacted by the investigator, with an additional 5 experts added based on recommendations from those initially contacted.

The sample included 12 experts in the first round and 9 in the second. While there is no strict consensus on participant numbers, the Delphi method typically requires at least 10 experts, which is generally considered sufficient to generate relevant information [12]. The experts who participated in the first round were the same ones invited for the second; however, three did not respond within the established timeframe for the second round and were thus excluded.

2.3. Delphi Survey Process and Timeline

An email was sent with the survey link in order to collect data from the experts in the first round. The body text of this email was intended for the operationalization of data collection according to the Delphi method. Therefore, it presented an informative note on the presentation of the researchers, the objectives of the study, a request for collaboration, the link to the online survey, and the request for recommendation of other experts, by providing the respective email with their consent. The email also had the deadline for completing the form. The deadline for completing the first survey occurred from the 3rd of June to the 29th of July, 2021, and the second round from the 1st to the 15th of September, 2021.

An email with the survey link was sent to the experts for data collection in the first round. This email was structured to support data collection following the Delphi method, including an introduction to the researchers, an overview of the study objectives, a request for participation, the survey link, and a request for expert recommendations, with consent to share their contact information. The email also provided a deadline for survey completion: the first survey was open from June 3 to July 29, 2021, and the second round from September 1 to September 15, 2021.

2.4. Data Collection

In the first round, a survey was created using Google Forms with two sections: the first section collected sociodemographic data, while the second focused on the role of physiotherapists in treating VUs, divided into two subsections—therapeutic exercise and compression therapy. The interventions included in the survey were developed based on findings from a previously conducted systematic literature review [9]. Only two modalities were selected for this study to allow for more in-depth expert analysis.

For each type of intervention, a scale of agreement/disagreement was used, along with open-ended questions for participants to provide additional information or comments, allowing them to express their views freely. A Likert scale from 1 to 5 was used for the agreement/disagreement scale, where 1 indicated “strongly disagree” and 5 indicated “strongly agree” [12]. The form from the first round can be found in the online supplementary material.

In the second round, the structure of the form was identical to the first, incorporating adjustments based on feedback received during the initial round. This round also included open-ended questions for comments and suggestions. Participants completed the form online via a provided link, and all data were subsequently transferred to a database.

2.5. Data Analysis

Quantitative analyses of the sociodemographic data and expert consensus were conducted using IBM SPSS Statistics version 19.0. Descriptive statistics were employed, calculating the mean and standard deviation for continuous variables, as well as frequency and percentage distribution for ordinal and nominal variables. Additionally, descriptive statistics were applied to the data obtained for the interventions, utilizing frequency distribution and percentage for the ordinal variables.

The experts’ comments and observations for each intervention were qualitatively analyzed to refine and standardize the information.

In this study, consensus for the first form was determined by the answers 3, 4, and 5 on the Likert scale, which corresponded to “neither agree nor disagree,” “agree,” and “strongly agree.” For the second form, consensus was defined by the answers “agree” and “strongly agree.” A threshold of 80% was established as necessary to consider consensus among the responses in each round. In both rounds, answers indicating “don’t know/no opinion” were excluded from the calculations of agreement and disagreement percentages.

The analysis process ended with the second round, since the desired levels of consensus were obtained.

The analysis process concluded after the second round, as the desired levels of consensus were achieved.

2.6. Ethics

Ethical approval was obtained from the Ethics Committee of the Health Sciences Research Unit: Nursing (UICISA:E) of the Coimbra Nursing School, on October 14, 2020 (Number 705/09-2020).

The informed consent was included at the beginning of the form, and participants could not proceed without providing their consent. All relevant information about the study was detailed in the informed consent form. Participants’ email addresses were collected with their prior authorization, and those identified through the snowball method were contacted beforehand by the recommending expert to obtain their contact details. This study was conducted in accordance with the ethical standards outlined in the Declaration of Helsinki.

3. Results

3.1. Participants Characterization

The sample for this study consists of 12 experts, including 25% physicians, 41.7% nurses, and 33.3% physiotherapists. The participants are spread across various work settings, although most physiotherapists primarily work in private clinics (75%) and hospitals (50%). Approximately 41.7% of the experts have over 20 years of experience in wound care. While the participants have experience treating different types of wounds, the physiotherapists in the expert panel primarily focus on venous ulcers (VUs) (50%), surgical wounds (50%), and oncological wounds (50%). Only 41.7% of the participants have access to a multidisciplinary wound care team in their workplace (Table 1).

Table 1. Participants’ characterization.

Age (Years)	Mean (±SD)	44 (±7,9)
Gender	Male n (%)	8 (66,7%)
	Female n (%)	4 (33,3%)
Profession	Nurse n (%)	5 (41,7%)
	Physiotherapist n (%)	4 (33,3%)
	Physician n (%)	3 (25%)
Workplace	Hospital n (%)	6 (50%)
	Private clinic n (%)	6 (50%)
	University teacher n (%)	3 (25%)
	Primary health care n (%)	2 (16,7%)
Professional experience	> 20 years n (%)	5 (41,7%)
	15 a 20 years n (%)	4 (33,3%)
	11 a 15 years n (%)	2 (16,7%)
	6 a 10 years n (%)	1 (8,3%)
Type of wound with more experience	Pressure ulcer n (%)	4 (33,3%)
	Leg ulcer n (%)	4 (33,3%)
	Diabetic foot ulcer n (%)	4 (33,3%)

	Venous ulcer n (%)	4 (33,3%)
	Arterial ulcer n (%)	2 (16,7%)
	Surgical wound n (%)	2 (16,7%)
	Oncological wound n (%)	2 (16,7%)
	Mixed etiology ulcer n (%)	1 (8,3%)
	Traumatic wound n (%)	1 (8,3%)
	Wound derived from cancer treatments n (%)	1 (8,3%)
	Dehiscence of amputation stump n (%)	1 (8,3%)
Types of training source	Congresses/Scientific conferences/Webinars n (%)	7 (70%)
	Postgraduate studies /Master's degree n (%)	3 (30%)
Time since the last training source	12 months n (%)	3 (30%)
	1 month n (%)	2 (20%)
	60 months n (%)	2 (20%)
	3 months n (%)	1 (10%)
	24 months n (%)	1 (10%)
	36 months n (%)	1 (10%)
Multidisciplinary wound care team at workplace	n (%)	5 (41,7%)
Professionals in the multidisciplinary team	Nurses n (%)	4 (21%)
	Physician n (%)	3 (15,8%)
	Vascular surgeon n (%)	2 (10,5%)
	Dermatologist n (%)	2 (10,5%)
	Nutritionist n (%)	2 (10,5%)
	Physiotherapist n (%)	2 (10,5%)
	General surgeon n (%)	1 (5,3%)
	Plastic surgeon n (%)	1 (5,3%)
	General clinician n (%)	1 (5,3%)
	Pharmacists n (%)	1 (5,3%)

3.2. Round 1

A total of 12 questions were presented to the experts. The minimum consensus was 90% and the maximum 100% for therapeutic exercise, and the agreement obtained for compression therapy was 80% and 100% (Table 2). All of the questions moved on to the next round.

The participants also proposed the “adaptation” of the exercise to the “patient’s characteristics” and their “pathology”, associating “muscle strengthening” with “aerobic exercise,” including “balance training,” and the use of a “vibrating platform.”

Table 2. Round 1: consensus of the use of therapeutic exercise and compression therapy in the treatment of VUs..

Therapeutic exercise			
The treatment plan should include resistance exercises [14,15].	Neither agree nor disagree	2 (16,7%)	Agreement 100%
	Agree	6 (50%)	
	Strongly agree	3 (25%)	
	Don't know/ no opinion	1 (8,3%)	
Resistance exercises should include 10 to 25 repetitions [14,15].	Strongly disagree	1 (8,3%)	Agreement 90%
	Neither agree nor disagree	1 (8,3%)	
	Agree	6 (50%)	
	Strongly agree	2 (16,7%)	
	Don't know/ no opinion	2 (16,7%)	
	Neither agree nor disagree	1 (8,3%)	Agreement 100%

Resistance exercises should include 2-3 sets [14,15].	Agree	7 (58,3%)	Agreement 90,9%
	Strongly agree	2 (16,7%)	
	Don't know/ no opinion	2 (16,7%)	
Resistance exercises should be performed 3 times a day [14].	Strongly disagree	1 (8,3%)	Agreement 100%
	Neither agree nor disagree	6 (50%)	
	Agree	2 (16,7%)	
	Strongly agree	2 (16,7%)	
	Don't know/ no opinion	1 (8,3%)	
The treatment plan should include aerobic exercises [15].	Neither agree nor disagree	1 (8,3%)	Agreement 100%
	Agree	6 (50%)	
	Strongly agree	4 (33,3%)	
	Don't know/ no opinion	1 (8,3%)	
Aerobic exercises should be performed at least 3 times per week [15].	Neither agree nor disagree	1 (8,3%)	Agreement 100%
	Agree	5 (41,7%)	
	Strongly agree	4 (33,3%)	
	Don't know/ no opinion	2 (16,7%)	
Aerobic exercises should be performed for at least 30 minutes [15].	Disagree	1 (8,3%)	Agreement 90%
	Neither agree nor disagree	3 (25%)	
	Agree	2 (16,7%)	
	Strongly agree	4 (33,3%)	
	Don't know/ no opinion	2 (16,7%)	
The treatment plan should include stretching of the major muscle groups of the lower limb [14,15].	Agree	4 (33,3%)	Agreement 100%
	Strongly agree	6 (50%)	
	Don't know/ no opinion	2 (16,7%)	
The therapeutic exercise treatment plan should have a minimum duration of 12 weeks [14,15].	Disagree	1 (8,3%)	Agreement 90%
	Neither agree nor disagree	2 (16,7%)	
	Agree	3 (25%)	
	Strongly agree	4 (33,3%)	
	Don't know/ no opinion	2 (16,7%)	
Compression therapy			
The treatment plan should include compression therapy [15].	Strongly disagree	1 (8,3%)	Agreement 91,7%
	Neither agree nor disagree	1 (8,3%)	
	Agree	2 (16,7%)	
	Strongly agree	8 (66,7%)	
Compression therapy should be combined with resistance and aerobic exercise [15].	Neither agree nor disagree	1 (8,3%)	Agreement 100%
	Agree	3 (25%)	
	Strongly agree	7 (58,3%)	
	Don't know/ no opinion	1 (8,3%)	
The duration of a treatment plan with compression therapy combined with therapeutic exercise should be at least 12 weeks [15].	Disagree	2 (16,7%)	Agreement 80%
	Neither agree nor disagree	1 (8,3%)	
	Agree	5 (41,7%)	
	Strongly agree	2 (16,7%)	
	Don't know/ no opinion	2 (16,7%)	

3.3. Round 2

All questions had a minimum consensus of 80%, so consensus was reached on all questions. The percentages of consensus of therapeutic exercise and compression therapy are available in Table 3.

Table 3. Round 2: consensus of the use of therapeutic exercise and compression therapy in the treatment of venous ulcers.

Therapeutic exercise			
Despite the indications in the plan below, the number of sets, repetitions, and duration of each exercise may be adjusted for each patient according to their tolerance, individual characteristics, and pathology.	Agree	1 (11,1%)	Agreement 100%
	Strongly agree	8 (88,9%)	
The treatment plan should include resistance exercises [14,15].	Agree	8 (88,9%)	Agreement 100%
	Don't know/ no opinion	1 (11,1%)	
Resistance exercises should include 10 - 25 repetitions [14,15].	Disagree	1 (11,1%)	Agreement 87,5%
	Agree	7 (77,8%)	
	Don't know/ no opinion	1 (11,1%)	
Resistance exercises should include 2-3 sets [14,15].	Agree	8 (88,9%)	Agreement 100%
	Don't know/ no opinion	1 (11,1%)	
Resistance exercises should be performed 3 times a day [14].	Disagree	1 (11,1%)	Agreement 83,3%
	Agree	5 (55,6%)	
	Don't know/ no opinion	3 (33,3%)	
The treatment plan should include aerobic exercises [15].	Agree	9 (100%)	Agreement 100%
Aerobic exercises should be performed at least 3 times per week [15].	Agree	7 (77,8%)	Agreement 100%
	Don't know/ no opinion	2 (22,2%)	
Aerobic exercises should be performed for at least 30 minutes [15].	Agree	6 (66,7%)	Agreement 100%
	Don't know/ no opinion	3 (33,3%)	
The treatment plan should include stretching of the major muscle groups of the lower limb [14,15].	Agree	8 (88,9%)	Agreement 100%
	Don't know/ no opinion	1 (11,1%)	
The therapeutic exercise treatment plan should have a minimum duration of 12 weeks [14,15].	Agree	6 (66,7%)	Agreement 100%
	Don't know/ no opinion	3 (33,3%)	
Resistance exercises may be combined with aerobic training.	Agree	5 (55,6%)	Agreement 100%
	Strongly agree	3 (33,3%)	
	Don't know/ no opinion	1 (11,1%)	
The treatment plan may include balance training.	Agree	3 (33,3%)	Agreement 100%
	Strongly agree	5 (55,6%)	
	Don't know/ no opinion	1 (11,1%)	
The treatment plan may include the use of a vibrating platform [16].	Neither agree nor disagree	1 (11,1%)	Agreement 100%
	Agree	2 (22,2%)	
	Strongly agree	4 (44,4%)	
	Don't know/ no opinion	2 (22,2%)	

The vibrating platform may be combined with compression therapy [16].	Neither agree nor disagree	2 (22,2%)	Agreement 100%
	Agree	1 (11,1%)	
	Strongly agree	4 (44,4%)	
	Don't know/ no opinion	2 (22,2%)	
Compression therapy			
The treatment plan should include compression therapy [15].	Agree	9 (100%)	Agreement 100%
Compression therapy should be combined with resistance and aerobic exercise [15].	Agree	7 (77,8%)	Agreement 100%
	Don't know/ no opinion	2 (22,2%)	
The duration of a treatment plan with compression therapy combined with therapeutic exercise should be at least 12 weeks [15].	Agree	7 (77,8%)	Agreement 100%
	Don't know/ no opinion	2 (22,2%)	
Compression therapy should be used after the wound has healed [5].	Neither agree nor disagree	1 (11,1%)	Agreement 100%
	Agree	1 (11,1%)	
	Strongly agree	6 (66,7%)	
	Don't know/ no opinion	1 (11,1%)	

3.4. Final Analyses

The physiotherapist’s intervention management in the treatment of VUs includes therapeutic exercise (resistance training, aerobic training, stretching, balance training, use of a vibrating platform) as well as compression therapy (Table 4).

Table 4. Physiotherapy intervention management in the treatment of VUs.

Preliminary note: Despite the indications in the plan, the number of sets, repetitions, and duration of each exercise may be adjusted for each patient according to their tolerance, individual characteristics, and pathology. It is also important to consider that certain clinical situations may require interdisciplinary assessment.	
Therapeutic exercise	
Resistance training	Repetitions 10 – 25x
	Sets 2 – 3
	Frequency 3x/dia
	Duration of at least 12 weeks
	Combined with aerobic exercise
Aerobic training	Duration of at least 30 minutes
	Frequency: at least 3x/week
	Duration of at least 12 weeks
Stretching	Combined with resistance training
	Major muscle groups of the lower limb
Balance training	
Vibrating platform	Combined with compression therapy
Compression therapy*	
Combined with resistance and aerobic exercise	
Duration of at least 12 weeks when combined with resistance and aerobic exercise	
Should be used even after wound healing	

* Dependent on prior ABPI evaluation

Resistance exercise, such as plantar flexion with body weight, should be done within 2 to 3 sets of 10 to 25 repetitions, with a frequency of 3 times per day, for at least 12 weeks. Aerobic exercise, like using a lower limb cycle ergometer, should be done for at least 30 minutes, 3 times per week, over 12 weeks. Both resistance training and aerobic training can be combined. The intervention should also include stretching of the major muscle groups of the lower limb, as well as balance training and the use of a vibrating platform, which can be combined with compression therapy. Finally, compression therapy should also be included, which can be combined with resistance and aerobic exercise. When combined with these types of exercises, compression should be used for at least 12 weeks and should continue even after the wound has healed.

All physiotherapeutic interventions mentioned above are adjuvant and were combined with standard treatment.

4. Discussion

Considering that the physiotherapist’s interventions complement the standard treatment for VUs healing, and recognizing that these interventions can be tailored to the patient’s condition, a consensus was reached on a specific intervention approach within the physiotherapist’s scope of expertise.

In the guidelines regarding the prevention and treatment of VUs, various interventions are mentioned, such as compression therapy, which is considered the standard treatment [17–20], and therapeutic exercise, although it is recommended to treat comorbidities associated with chronic venous insufficiency, several studies have shown the benefits of wound healing [17–19]. The effect of exercise on the healing of VUs has been the subject of study, but it is known that the main cause of VUs is chronic venous insufficiency, which occurs due to venous reflux caused by valvular dysfunction and the muscle pump of the leg. Dysfunction of the leg muscle pump is one of the main predictors of VU healing, as it is the primary mechanism that propels about 60% of the blood from the deep venous system to the heart [17,19]. Given this, the exercises designed for this population emphasize ankle joint mobility to enhance the function of the leg muscle pump, optimize lower limb hemodynamics, and improve ankle flexibility, ultimately contributing to the healing of ulcers [17,19].

Compression therapy should be combined with other therapies to promote healing [19,20], and it is recommended to be used at least once a day, six days per week [21]. Thus, certain studies indicate that multilayer compression offers a more effective action than compression systems composed of a single layer [18,20,21], and elastic compression is more effective than inelastic compression [21].

Mutlak et al. (2018) conducted a study combining exercise with compression therapy and concluded that exercise had a significant effect on the healing of VUs and that this effect is enhanced with compression therapy [22]. Similarly, a study from Kulprachakarn et al. (2022) randomized VU’s patients to an intervention group that received wound dressing, compression therapy and a tailored exercise training, and a control group that only received wound dressing and compression therapy. The tailored exercise training consisted of stretching, resistive, and aerobic exercise sessions. The intervention group had a higher trend of healing rate after 12-week training than those in the control group, but this trend was not significantly different [17].

According to expert suggestions, balance training and vibration platform exercises were added to the treatment plan. Patients with VUs experience pain, reduced ankle range of motion, loss of strength and muscle tone in the gastrocnemius muscles, as well as changes in gait. These factors are associated with an increased risk of falls and balance impairments. In regards to balance training, a comparative study revealed that approximately 60 out of 102 patients (58.8%) experienced falls while visiting the outpatient wound treatment service. The most frequent activity at the time of the falls was walking, and a higher incidence of falls was associated with a greater number of comorbidities, fear of falling, and low confidence in balance, rather than the number of ulcers alone [23]. A clinical study by Wilson et al. (2002) investigated the impact of a vibration platform in conjunction with compression therapy on the healing of VUs. The study concluded that the use of a vibration platform

combined with compression therapy stimulates the healing process and helps reduce pain. The same study noted that vibration compresses blood vessels and reduces blood flow while increasing fluid drainage into the lymphatic vessels. After vibration, the blood vessels expand and fill the space left by the drained fluid, temporarily increasing blood flow [16].

5. Conclusions

This study confirmed the importance of a multidisciplinary approach in the assessment and treatment of patients with VUs, which includes the role of the physiotherapist. The diversity of the expert panel and their suggestions regarding the content of the interventions were crucial for refining and enhancing the treatment strategies.

In conclusion, physiotherapy can serve as an adjunct therapy in the treatment of VUs. The interventions include therapeutic exercise (resistance training, aerobic exercise, stretching, balance training, and the use of a vibrating platform) alongside compression therapy. All physiotherapy interventions should be complemented by standard local wound care treatments.

The study had limitations, such as the number of experts who were part of the panel, mainly physiotherapists. Some experts answered “don’t know/ no opinion”. This is justified by the fact that some interventions are highly specific to the field of physiotherapy.

Supplementary Materials: The following supporting information can be downloaded at the website of this paper posted on Preprints.org.

Author Contributions: Conceptualization, SM, AR, RC.; methodology, SM, AR.; validation, SM, AR, RC.; formal analysis, SM, AR.; investigation, SM, AR, RC; data curation, SM, AR; writing—original draft preparation, SM.; writing—review and editing, SM, AR; RC; visualization, SM, AR, RC; supervision, AR, RC; project administration, SM. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Ethics Committee of the Health Sciences Research Unit: Nursing (UICISA:E) of the Coimbra Nursing School, on October 14, 2020 (Number 705/09-2020), for studies involving humans.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: We encourage all authors of articles published in MDPI journals to share their research data. In this section, please provide details regarding where data supporting reported results can be found, including links to publicly archived datasets analyzed or generated during the study. Where no new data were created, or where data is unavailable due to privacy or ethical restrictions, a statement is still required. Suggested Data Availability Statements are available in section “MDPI Research Data Policies” at <https://www.mdpi.com/ethics>.

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Conflicts of Interest: The authors declare no conflicts of interest.

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