Appendix 1

Author,year/ country	Sample Size	Groups	Initial size(cm2)	Final size (cm2)	Duration (month)	Wagner Grade	Photobiomodulation/ES parameters	Treatment time	Traditional treatment	Outcomes
Rojas et al,(34)2023/USA	16 17	ES PLA	7.4±8.5 3.1 ± 5.6	5.8 ± 8.0 3.2 ± 8.7	>1 month	Not clear I-II (converted)	Waveform: high voltage pulsed alternating current Voltage: 150-250 Volts Electrode Placement: Adhesive pads placed above the ankle joint on acupuncture points bilaterally	home daily for 1 hour for 4 weeks	Identical, non-functional device (placebo) for the same period	The present study showed that asymmetrical biphasic pulsed currents with placement of electrical pads above the ankle improve wound healing and magnitude of skin perfusion without the need of removing any dressing from the lesion site.
Wadee et al,(35)2021/Egypt	25 25 25	HBOT + TT LLLT + TT TT	5.48± 0.70 5.58± 0.72 5.61± 0.75	0.45± 0.16 0.75± 0.23 5.50± 0.75	3.3 ± 1.3 3.5 ± 1.7 3.2 ± 1.5	II	Laser type: GaAlAs diode laser(33 diodes) Wavelengths: 5 x 850 nm (200 mW), 12 x 670 nm (10 mW), 8 x 880 nm (25 mW), 8 x 950 nm (15 mW) Dose: 4J/cm2 Pulse frequency: 10 kHz Application: in contact	3 sessions (8 min) /week for 6 weeks	Wound cleaning. The ulcer area was cleaned twice daily with saline, and a new bandage was applied after cleaning.	Both LLLT and HBOT were shown to be effective in the short term, and may be used as adjunctive methods to accelerate healing in chronic DFU.
Vitoriano et al,(36)2019/Brazil	6 6	LLLT+ TT LED+TT	1.76 ± 1.69 1.45 ± 1.52	0.36 ± 0.50 0.64 ± 0.81	NA	I (converted)	Laser Group: Wavelength: 830nm Power: 30mW Dose: 7 J/cm2 per point LED Group: Wavelength: 850nm Power: 48mW Dose: 5.28 J/cm2 per point	10 sessions/ 2weeks	Daily washing with sodium chloride, the lesion was covered by sterile gauzes, bandage, and surgical tape	There was improvement of the neuropathic signs and symptoms, also improvement of the tissue repair in the two therapeutic modalities; however, the laser presented a higher rate of speed in relation to the LED.

Tantawy et al,(37)2018/Egypt	33 32	LLLT + TT infrared laser therapy + TT	10.2 ± 5.6 9.5 ± 4.2	3.7 ± 1.2 4.1 ± 1.3	8.5 ± 3.22 9.1 ± 3.34	I-II	Wavelength: 632 nm Peak power: 20 mW Pulse frequency: 25 Hz	90 s application/cm2 and the dose of 5 J/cm2 for 8 weeks	904 nm, peak power of 20 mW, and pulse frequency of 25 Hz, power density of 40 mW/cm2 90 s/cm2, and dose of 6 J/cm2	Enhance cell metabolism production of adenosine triphosphate faster wound healing increased fibroblast activity and collagen synthesis heightens epithelial cell layer thickness improve angiogenesis
Frangez et al,(38)2018/Slovenia	30 30	LLLT + TT PLA + TT	13.15 15.84	7.364 10.296	NA	NA	Wavelengths: 625nm (24% of total power density), 660nm (71% of total power density), 850nm (5% of total power density) Light source: Light-emitting diodes (LEDs) Application: 10cm distance from the wound, light applied to entire wound area Dosage: Single session: 2.4 J/cm2 over 5 minutes Total dosage over 8 weeks: Approximately 57.6 J/cm2	3sessions/ week for 8 weeks (5 min)	Debridement of the necrotic tissue, maintenance of a moist wound bed, and control of infection. Control group received therapy with light that simulated LED—a placebo	1-Wound bed granulation and preparation for further treatment 2-Wound surface area reduction
Priyadarshini et al,(39)2018/India	50 50	LLLT TT	13.74 ± 11.88 19.09 ± 15.03	3.97 ± 5.41 18.80 ± 17.70	1.10 ± 0.84 1.07 ± 0.96	I-II	Red light Wavelength: 660 nm Dose: 4-8 J/cm2	15 day (20 min)	Dressings with betadine or wet with saline, course of antibiotic treatment and slough removed whenever	Laser therapy is painless, cost effective procedure which induces faster granulation, wound contraction and re-epithelialization, thus accelerates complete wound healing hence avoiding secondary procedures like split skin grafting. Control of infection was also better compared to control group.

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Santos et al,(40)2018/Brazil	8 8	LLLT TT	1.83 ± 1.08 2.97 ± 1.66	0.32 ± 0.26 1.63 ± 1.57	6.00 ± 7.23 13.00 ± 13.58	II-III (converted)	Wavelength: 660 nm Energy density: 6 J/cm2 Power: 0.03 W Mode: Continuous Treatment time per dot: 13sec	4 sessions /week for 4 weeks	Physiological solution (PS) 0.9%, for cleaning the wound bed/ applying hydrogel 2 mg on the lesion bed/ using gauze and bandages as secondary cover (every 48 h)	LLLT has allowed the return of pain and tactile sensitivity in some patients who had lost the sensitivity in their feet completely. Control group presented a good response in repairing ulcer tissue, but conventional treatment was not able to achieve the expected result in a 4-week period.
Srilestari et al,(41)2017/Indonesia	18 18	LLLT + TT SHAM	4.75(0.10 –9.94) 2.33 (0.90–9.88)	0.24 (0.00 –2.54) 1.25 (0.00–8.11)	Not Clear 3 month(approximately)	I-III (converted)	"Laser acupuncture" Wavelength: 630nm Power: 100mW Dose: 4J per point Duration: 1 minute at each acupuncture point Application: in contact "LLLT on ulcer" wavelength: 630nm Application: Non-contact	2 sessions/week for 4 weeks	For the control group, the laser pen instrument was directed on the site of diabetic foot ulcer and the instrument was attached to the acupuncture points; however, the laser was not activated.	Combined laser-puncture and conventional wound care treatment was effective in accelerating the healing of diabetic foot ulcer.
Asadi et al,(42)2017/Iran	13 11	ES + TT PLA + TT	4.19±2.2 3.82±1.7	1.83±1.63 2.88±1.51	3.3 ± 1 2.3 ± 1.1	II	Waveform: Cathodal direct current Intensity: Sensory threshold (mean 3.36 ± 0.58 mA) Electrodes: Active electrode: cathode	3sessions/week for 4 weeks	Same as in the ES group, but the intensity current was zero. Conventional therapy: debridement, cleaning of the wound with saline, and dressings.	Application of ES has an immediate positive effect on the release of HIF-1α and VEGF in wound fluids and on the reduction of WSA in ischemic DFUs.
Mathur et	15	LLLT +	14.84	9.30	1.86	I	Wavelength: 660 ± 20	15 day (1	Daily wet saline or	LLLT group have more

al,(43)2017/India	15 TT TT		13.52	11.46	1.70		nm nm power density: 50 mW/cm2 Dose: 3 J/cm2 Application: Non-contact	min)	betadine dressings, antibiotic treatment, contact cast immobilization and slough excision as and when required.	granulation tissue compared to the control group which still has some amount of pus. the wounds in subjects treated with LLLT contracted significantly more than the wounds in the nontreated group.
Rasheed et al,(44)2017/India	15 15	PEMF + TT LLLT+ TT	13.096 ± 5.93 17.55 ± 12.1	5.84 ± 3.63 2.033 ± 2.01	NA	II	PEMF (Group A) Intensity: 0.5 Gauss Frequency: 20 Hz Laser (Group B) Laser type: He-Ne Wavelength: 904 nm Energy density: 10 J/cm2	3 sessions (10 min) /week for 4 weeks	Diabetic drugs and nursing care.	Infra-red laser and PEMF are two effective and recommended modalities in management of infected diabetic foot ulcer. However, laser therapy is better for wound regeneration.
Sanati et al,(45)2016/Iran	15 12	LLLT PLA	4.94 ± 2.91 4.63 ± 2.34	1.25 ± 1.04 3.30 ± 1.25	1.66 ± 0.60 1.60 ± 0.73	II	Laser type: Ga-As Wavelength: 904 nm Peak power: 90 mW Dose: 2 J/cm2	3 sessions /week for 4 weeks	In the placebo group laser probe was set similar to the laser group, but the power was off. Wound washing, oral antibiotics, pressure removal.	Ga-As laser using photochemical and non-thermal mechanisms may be effective on the acceleration of diabetic chronic foot ulcer closure.
Asadi et al,(46)2015/Iran	10 10	ES PLA	4.05±2.01 4.27±3.2	1.01±0.8 2.6±1.1	3.4±0.96 2.9±0.97	II	Waveform: Cathodal DC Intensity: Sensory threshold Electrodes: Active electrode: cathode	3sessions/ week for 4 weeks	Same procedure with zero-intensity electrical stimulation	Induction of ES could improve the blood circulation and skin temperature around wounds, leading to the acceleration of wound closing.
Feitosa et al,(47)2015/Brazil	8 8	LLLT+ TT TT	7.98 ± 2.06 2.55 ± 0.77	2.39 ± 1.26 8.43 ± 1.84	NA	NA	Wavelength: 632.8 nm Waveform: Pulsed Peak power: 30 mW Dose: 4 J/cm2	3 sessions (80s) /week for 4 weeks	Daily washing with sodium chloride (saline solution 0.9%)	Significant reduction of pain in the disease treated with laser. Low level laser appears to be an efficient method.

Mohajeri-Tehrani et al,(48)2014/Iran	10 10	ES PLA	2.48 ± 0.97 2.43 ± 0.39	1.71 ± 0.66 Not Clear 2.18 ± 0.35 Not Clear	14.7 ± 1.5 12 ± 1	II	Waveform: Direct current Intensity: Sensory threshold (1.48 ± 0.98 mA) Active electrode: cathode	3 sessions (1 hour) /week for 4 weeks	Debridement, cleaning of the wound with saline, dressing, and systemic antibiotic therapy	Application of low-intensity ES increases the expression of VEGF and NO, which may lead to wound healing in diabetic foot ulceration.
Ortíz et al,(49)2014/Colombia	9 10 9	ES LLLT TT	NA	NA	16.2 ± 34.6	I-II	Laser Parameters: Wavelength: 685 nm Power: 30 mW Application: non-contact Mode: continuous Methods in: - edges of the ulcer Electrical Pulse Parameters: Intensity: Submotor Pulse Frequency: 100 pps Pulse Duration: 100μs Polarity: Negative (cathode) during the first three treatment sessions, then changed to positive (anode) for the rest of the treatment	3 sessions (45min) /week for 16 weeks or until the wound closed	Irrigation with physiological saline solution, selective sharp debridement of necrotic tissue and maintaining a moist environment by applying an appropriate wound dressing	Results of this study did not demonstrate additional effects of LLLT or HVPC to the standard wound care. Also no changes were identified in the protective sensation, nerve conduction studies or the quality of life of patients.
Kajagar et al,(50)2012/India	34 34	LLLT+ TT TT	26.08 ± 68.31 27.47 ± 6.03	15.64 ± 43.73 24.24 ± 5.51	1.16 0.93	I	Pulse frequency: 5 kHz. Power density: 60 mW/cm2 Dose: 2-4 J/cm2	daily for 15 days	Daily wet saline or betadine dressings, antibiotic treatment, contact cast immobilization and slough excision.	LLLT is an effective modality to facilitate wound contraction in patients and can be used as an adjunct to conventional mode of treatment.
Kaviani et al,(51)2011/Ir	13 10	LLLT + TT	10.7±25.7 7.8±11	73.7±10.2 %(reducti	11.4±8.5 8.8±3.6	I-II	Wavelength: 685 nm Power: 50 mW	6sessions/ week	Patients in the placebo treatment group	LLLT can accelerate the healing process of non-

an		PLA + TT		on percentage) 47.3±15.4 %(reduction percentage)			Fluence: 10J/cm2 Time of irradiation: 200s Power density: 50 mW/cm2 Application: Non-contact		similarly received sham irradiation	ischemic chronic foot ulcers in patients with diabetes.
Minatel et al,(52)2009/Brazil	7 7	LLLT + TT PLA + TT	11.8±20.46 3.8±4.13	NA	95.5±33.0 28.10±23.6	NA	Wavelengths: 660 and 890 nm Light source: LEDs (light emitting diodes) were used, with 4 red 660 nm diodes and 32 infrared 890 nm diodes clustered together in the treatment probe. Power: 100 mW/cm2. The placebo probe emitted less than 1 mW/cm2. Dose: 3 J/cm2 Application: in contact	2sessions/ week for 90 days	Ulcers were dressed with 1% silver sulfadiazine cream covered with gauze and bandaged.	Combination of 660 and 890 nm light promotes tissue granulation and rapid healing of diabetic ulcers that failed to respond to other forms of treatment.
Naidu et al,(53)2005/ Malaysia	8 8	LLLT TT	5.28 4.21	1.31 3.59	NA	I	helium-neon medium. (The laser parameter was not mentioned) Dose: 1-5 J/cm2 Mode: continuous	5 sessions / week for 6 weeks	Daily dressing regime consisting of normal saline followed by povidone and covered with sterile gauze.	The use of low output laser therapy can accelerate the rate of healing.
Lundeberg et al,(54)1992/Sweden	32 32	ES + TT PLA + TT	24.2±12.6 22±9.6	39±14(%) (Remaining percentage) 59±11(%) (Remaining percentag	NA	NA	Waveform: alternating constant current Frequency: 80 Hz Intensity: Set to produce visible muscle contraction Pulse width: 1 msec Electrode Placement: outside the ulcer surface	14sessions /week for 12 weeks	The standard regimen consisted of cleansing of the wound with saline, application of a paste bandage followed by a support bandage, plus exercise advice from a standard instruction sheet.	The results of the present study show that, the healing of wounds in the ES group was on average 61% of the initial size and, of the wounds in the placebo group, 41%.

e)		area Polarity: The polarity of the treatment electrode was changed after each treatment.	The placebo procedure followed that of ES except that the electrodes had no output.