

Clinical Trial Protocol

Iranian Registry of Clinical Trials

28 Jun 2026

Effects of low-level laser therapy in addition to conventional physical therapy on pain and numbness of lower limb in patients with diabetic peripheral neuropathy: a randomized controlled trial

Protocol summary

Study aim

To determine the effects of Low-Level Laser Therapy in addition to conventional physical therapy on pain and numbness in lower limbs of patients with diabetic peripheral neuropathy.

Design

A concealed, randomized, single blinded, sham controlled clinical trial with a parallel group design of 43 patients, enrolled between November 2021 and March 2022, and followed for 6 months.

Settings and conduct

Physical Therapy Department, University of Lahore Teaching Hospital

Participants/Inclusion and exclusion criteria

Inclusion Criteria: Both males and females; Age ranging from 45 to 70 years; Type II diabetes with clinical stage N2a of diabetic peripheral neuropathy; Peripheral neuropathic symptoms lasting for ≥ 6 months. Exclusion Criteria: Unstable glycemic index; Pregnancy; Some surgical cases such as knee replacement or any spinal surgery; Spinal stenosis, spinal compression or any other relative radiculopathy; Patients having malignancy and who have received radiotherapy treatment during last six months; Peripheral vascular disease or claudication; Skin discoloration or skin ulcers

Intervention groups

In experimental group, patients will receive 20-25 minutes of therapy session including 5 minutes of LLLT on lumbosacral area and plantar surface of foot each, along with the conventional therapy, including TENS for 15 minutes on lumbosacral area and plantar surface of foot. TENS will be used on both sites at the same time. This session will be given for 4 days a week, for 4 consecutive weeks. The patients in conventional physical therapy group will also receive the same treatment including TENS and LLLT but the laser unit will be switched off this time to get sham therapy.

Main outcome variables

Pain Numbness

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20210702051760N1**

Registration date: **2022-03-29, 1401/01/09**

Registration timing: **retrospective**

Last update: **2022-03-29, 1401/01/09**

Update count: **0**

Registration date

2022-03-29, 1401/01/09

Registrant information

Name

Shahzaib Anwer

Name of organization / entity

The University of Lahore

Country

Pakistan

Phone

+92 42 35405234

Email address

msptn02191037@student.uol.edu.pk

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2021-07-26, 1400/05/04

Expected recruitment end date

2022-03-26, 1401/01/06

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Effects of low-level laser therapy in addition to conventional physical therapy on pain and numbness of lower limb in patients with diabetic peripheral neuropathy: a randomized controlled trial

Public title

Effects of low-level laser therapy in addition to conventional physical therapy on pain and numbness

Purpose

Treatment

Inclusion/Exclusion criteria**Inclusion criteria:**

Both males and females Age ranging from 45 to 70 years Type II diabetes with clinical stage N2a of diabetic peripheral neuropathy Peripheral neuropathic symptoms lasting for ≥ 6 months

Exclusion criteria:

Unstable glycemic index Pregnancy Some surgical cases such as knee replacement or any spinal surgery Spinal stenosis, spinal compression or any other relative radiculopathy Patients having malignancy and who have received radiotherapy treatment during last six months Peripheral vascular disease or Claudication Skin discoloration or skin ulcers

Age

From **45 years** old to **70 years** old

Gender

Both

Phase

2-3

Groups that have been masked

- Participant

Sample size

Target sample size: **43**

Randomization (investigator's opinion)

Randomized

Randomization description

Computer generated randomization assignments will be designed by an independent statistician and randomization will be done by one of the research team members who will not involve in patient recruitment or assessment or data analysis. The computer will randomly place the participants into control group and experimental group. The randomization assignments will be kept in opaque, sealed envelopes and unsealed by a researcher after baseline testing. Outcome assessors will be unaware of group assignment. The experiment will be started on the day after randomization.

Blinding (investigator's opinion)

Single blinded

Blinding description

Only the participants will be blinded. As both groups will be treated in prone lying and both, the participant and the care provider, will be wearing laser protection goggles, the participants will not be able to identify

whether the laser probe is emitting any rays or not.

Placebo

Used

Assignment

Single

Other design features**Secondary Ids**

empty

Ethics committees**1****Ethics committee****Name of ethics committee**

Ethics committee of The University of Lahore

Street address

1-Km Defence Road, near Bhuptian Chowk,

City

Lahore

Postal code

54000

Approval date

2021-11-15, 1400/08/24

Ethics committee reference number

IRB-UOL-FAHS/990/2021

Health conditions studied**1****Description of health condition studied**

Diabetic Peripheral Neuropathy

ICD-10 code

E08.40

ICD-10 code description

Diabetes mellitus due to underlying condition with diabetic neuropathy, unspecified

Primary outcomes**1****Description**

Pain

Timepoint

Before intervention, after 2 weeks and after 4 weeks of intervention

Method of measurement

Visual Analogue Scale for Pain

2**Description**

Numbness

Timepoint

Before intervention, after 2 weeks and after 4 weeks of intervention

Method of measurement

Michigan Neuropathy Screening Instrument (MNSI)

Secondary outcomes

empty

Intervention groups

1

Description

Intervention group: In experimental group, patients will receive 20-25 minutes of therapy session including 5 minutes of LLLT on lumbosacral area and plantar surface of foot each, along with the conventional therapy, including TENS for 15 minutes on lumbosacral area and plantar surface of foot having rectangular wave, 100µs pulse width, 150Hz frequency and 20mA intensity. TENS will be used on both sites at the same time. The 19 diode cluster head of the Laser 755 model will be used which have a wavelength of 640 nm (visible) and 950 nm (infrared) and a power of 10 mW (visible) and 15 mW (infrared) respectively. The cluster head will have 9 visible laser diodes and 10 infrared diodes. This session will be given for 4 days a week, for 4 consecutive weeks.

Category

Treatment - Devices

2

Description

Control group: The patients in this group will also receive the same treatment including TENS and LLLT but the laser unit will be switched off this time to get sham therapy. As the patient will be in prone lying with face turned downward and will be wearing protective goggles, so the participant will not be able to determine if the laser is turned off. 20-25 minutes of therapy session will be given in again in controlled group for 4 days a week, for 4 consecutive weeks.

Category

Placebo

Recruitment centers

1

Recruitment center

Name of recruitment center

Physical therapy Department of University Physical Therapy and Rehabilitation Clinic, University of

Full name of responsible person

Asim Arif

Street address

1-Km Defence Road, near Bhuptian Chowk,

City

Lahore

Postal code

54000

Phone

+92 42 111 865 865

Email

info@uol.edu.pk

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

The University of Lahore Teaching Hospital

Full name of responsible person

Asim Arif

Street address

1-Km Defence Road, near Bhuptian Chowk,

City

Lahore

Postal code

54000

Phone

+92 42 111 865 865

Email

info@uol.edu.pk

Grant name

Grant code / Reference number

Is the source of funding the same sponsor organization/entity?

Yes

Title of funding source

The University of Lahore Teaching Hospital

Proportion provided by this source

100

Public or private sector

Private

Domestic or foreign origin

Domestic

Category of foreign source of funding

empty

Country of origin

Type of organization providing the funding

Academic

Person responsible for general inquiries

Contact

Name of organization / entity

The University of Lahore

Full name of responsible person

Shahzaib Anwer

Position

Research Student

Latest degree

Bachelor

Other areas of specialty/work

Physiotherapy

Street address

4-B, Sadaat Street, Wahdat Colony,

City

Lahore

Province

Punjab

Postal code

54000

Phone

+92 42 35405234

Email

shahzaibanwer33@gmail.com

Person responsible for scientific inquiries

Contact

Name of organization / entity

The University of Lahore

Full name of responsible person

Shahzaib Anwer

Position

Student

Latest degree

Bachelor

Other areas of specialty/work

Physiotherapy

Street address

4-B, Sadaat street, Ghazali Park, Wahdat colony,

City

Lahore

Province

Punjab

Postal code

54000

Phone

+92 42 35405234

Email

shahzaibanwer33@gmail.com

Person responsible for updating data

Contact

Name of organization / entity

The University of Lahore

Full name of responsible person

Shahzaib Anwer

Position

Research Student

Latest degree

Bachelor

Other areas of specialty/work

Physiotherapy

Street address

4-B, Sadaat street, Ghazali Park, Wahdat colony,

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+92 42 35405234

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shahzaibanwer33@gmail.com

Sharing plan

Deidentified Individual Participant Data Set (IPD)

Undecided - It is not yet known if there will be a plan to make this available

Study Protocol

Undecided - It is not yet known if there will be a plan to make this available

Statistical Analysis Plan

Undecided - It is not yet known if there will be a plan to make this available

Informed Consent Form

Undecided - It is not yet known if there will be a plan to make this available

Clinical Study Report

Undecided - It is not yet known if there will be a plan to make this available

Analytic Code

Undecided - It is not yet known if there will be a plan to make this available

Data Dictionary

Undecided - It is not yet known if there will be a plan to make this available