

Effect of Yoga Therapy on Neurological Characteristics in Diabetic Peripheral Neuropathy : Neuro Health Perspective

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Abstract

Objective: Our study examines the influence of therapeutic yoga on persons aged 35 to 70 with diabetic peripheral neuropathy.. Yoga is an ancient Indian physical, mental, and spiritual discipline. In order to promote physical and mental well-being and achieve a state of inner peace and harmony. To compare group 1 and group 2 yoga therapy with Diabetes peripheral neuropathy among older male persons .

Data Sources: Thirty males proved with DPN, each group 15 members, have taken for study from Tamilnadu, India.

Study Design: The Douleur Neuropathique 4 questionnaire (DN4), which determines the risk of pain caused by neuropathic conditions and the loss of sensation, was administered to participants as part of extensive neurological screening.

Data Collection: 30 persons participated in the review. Team I through a trial bunch and a particular gathering received yoga practice .Team II went through the benchmark group and received no Yoga therapy .The practice given 3month preparatory phase, 6 days weekly .T-test was used to match the facts and explore it.

Principle findings: The 't' significance of DN4 has been calculated to be 3.873 for team I and -1.974 for team II, respectively. The results indicate that team I information demonstrates a significant improvement in the Neurological factors, whereas team II's negative t value indicates no significant change in the Neurological variables. The computed 't' value is more significant than the 2.14 table value.

Conclusion: According to the current investigation's outcomes, yoga therapy proved a much preferable for DPN.

Key Words: Health disparities, Yoga Therapy, Yogasanas, Meditation, functional improvement.

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INTRODUCTION

Diabetes is a persistent sickness described by elevated degrees of glucose in the blood. It happens when the body either doesn't deliver sufficient insulin or doesn't utilize insulin really. There are two primary sorts of diabetes: type 1 and type 2 diabetes. A lack of human body activity were impact to poor balance for glucose and it has enhance diabetes issues¹⁻⁷. DPN is the presence of peripheral nerve damage in patients with diabetes⁸⁻⁹. Patients with type 2 diabetes often have DPN¹⁰⁻¹¹. DPN prevalence was about 26.7% and exhibited significant ethnic variation¹². According to the Neurological Symptom Score questionnaire¹³⁻¹⁵, the prevalence of DPN in Taiwan was 26.8%, and by physical examination using the Michigan Neuropathy Screening Instrument (MNSI) standards, it was 34.5%. Due to later foot issues or pain management procedures, DPN has turned into a significant burden on both health and economy.¹⁶⁻²⁰

The DN4 is made up of four questionnaires that are divided into an interview and an examination. Ten items make up the DN4, which is administered by a clinician²¹⁻²². Studies show that DPN is more common and harmful in men than in women²⁴⁻²⁶. Participants in the DPN have undergone testing for essential neurological factors like DN4 for Neuropathy discomfort and loss of sensation. The main aim of investigation was to analyse 30 persons participated in the review. Team I through a trial bunch and a particular gathering received yoga practice .Team II went through the benchmark group and no received Yoga therapy .the 3 month preparatory phase, 6 days weekly. The Team I underwent the Yoga treatment as indicated by the organized plan with selected set of Yogasanas, set of Breathing practice & OM Dyana consideration, while the benchmark team II was happened with general medication without yoga treatment. In this article, the data assembled are examined and analyzed using a matched model t-test.

Symptoms of Diabetes

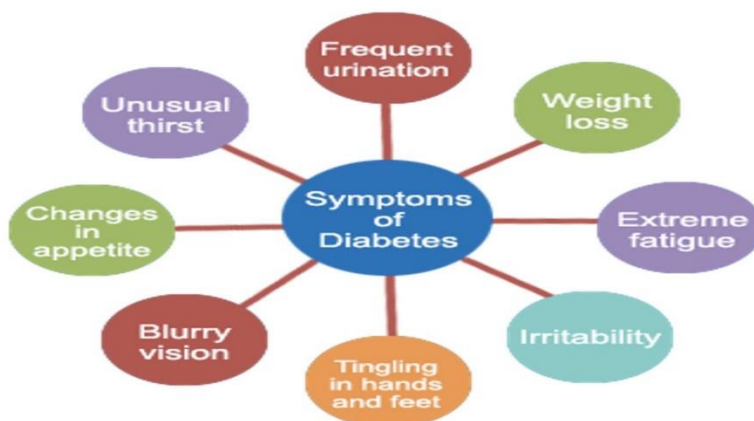


Fig. 1. Symptoms of Diabetes⁶

The typical side effects of diabetes are depicted in Figure 1 and include: The symptoms of diabetes may vary from human to human, however the side effects that are often present are 1. excessive urine , 2. Loss of body mass , 3. Higher level of Fatigue, 4. Irritability, 5. Tingling Hand and Feet, 6. Blurry Vision, 7. Changes in Appetite, 8. Unusual Thirst. It's important to consult a medical professional for a conclusive diagnosis treatment of diabetes²⁷.

Nervous system

Main sensory system and the peripheral sensory system are the two key components of the body's neurological architecture. The cerebral cortex and spinal rope of the focused sensory system. Nerves, organs, & tissues are together referred to as the "fringe nerve framework," or "fringe sensory system"²⁸⁻²⁹.

Peripheral Neuropathy

The term "Peripheral Neuropathy" refers to a variety of disorders that affect the peripheral nervous system, the extensive network of nerves that transmits information formed by spine & cerebral cortex to each other area of the body³⁰⁻³¹.

Diabetic peripheral neuropathy (DPN)

A issue that affects roughly half of people with diabetes is diabetic neuropathy.³²⁻³³ The hands and lower appendages are the parts of DPN that are most typical. It takes off when protective feelings are absent., which continuously damages feet³⁴⁻³⁵. DPN patients had issues for coordination of equilibrium in the body because of abnormal motor responses, which resulted in the loss or impairment of the sensory-motor and balance components of gait.³⁶⁻³⁷

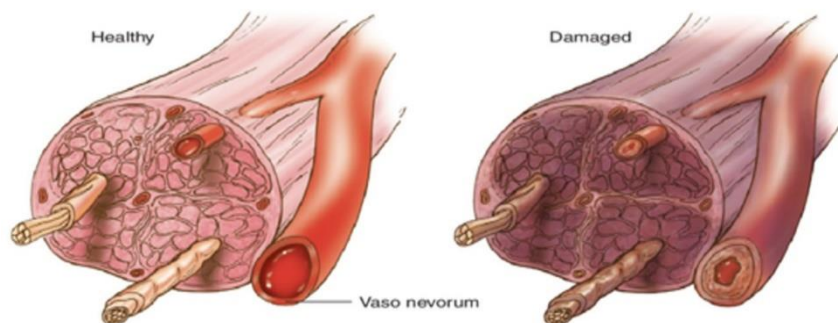


Fig. 2: Depiction of nerve damage in DPN

Figure 2 shown the main causes of abnormality in DPN both healthy and damaged nerves. In the vasa nervorum, diabetic individuals' tissues have neovascularization, blockage, and capillary destruction. Neurotransmission is hampered by reduced blood flow to the neural tissue, which affects both sensory and motor conduction.³⁸⁻⁴².

Yoga

Yoga is a mix of Body, Psyche and Soul. It implies adjusting and blending the body, psyche, and feelings. It has ideas of all singular energy associated with widespread energy, which has extraordinary impact in moulding the idea of the universe.

Yoga began in India. It shown seals and fossils of Indus Valley civilization showing ancient practice of yoga activity⁴³. The practise of yoga is helpful in the treatment of diabetes and other metabolic disorders. Yoga's immediate benefits on diabetes involve central nervous system and immunological systems. Individuals with diabetes can practise yoga regularly have improved glycaemic control and a lower risk of complications.⁴⁴⁻⁴⁷. The all-encompassing nature of yoga which helps to strengthen the body⁴⁸⁻⁵².

Yoga for DPN

Yoga is a type of fitness that combines stance, breathing, and meditation. It reduces anxiety, calms the nervous system, & maintains healthy life patterns. DPN, a condition that damage the nerves in the legs and feet and affects people with diabetes⁵³. Specific yoga poses and breathing techniques that can assist to increase circulation, minimize discomfort, and increase flexibility in the impacted regions. yoga has been shown to be beneficial for individuals with neurological disorders, including those assessed by the DN4 questionnaire⁵⁴⁻⁵⁶. Yoga enhances co-morbidities associated with DPN, including muscle strength, stability, loss of sensation and pain, and may be an effective method for DPN⁵⁷⁻⁵⁸. It is important to note that the effects of yoga on neurological pain & loss of sensation can vary from person to person, and that it is always best to specific yoga series help to DPN patients⁵⁹⁻⁶³.

- The potential effects of yoga-therapy on the neurological characteristics of DPN, from the perspective of neuro health. Individuals with DPN may benefit from yoga-therapy's favourable effects on nerve function. Asanas gently stretch the body may increase nerve mobility and minimise pressure on the peripheral nerves.
- Yoga- therapy have numerous of benefits for people with diabetes peripheral neuropathy. Despite the fact that yoga cannot cure all diseases, it can help with symptom management and improve overall wellbeing. Yoga may benefit those with diabetes peripheral neuropathy.

METHODOLOGY:

30 persons participated in the review. Team I through a trial bunch and a particular gathering received yoga practice .Team II went through the benchmark group and no received Yoga therapy . The practice given 3month preparatory phase, 6 days weekly. The team I included the Yoga treatment as indicated by the organized plan with selected asanas, Breathing practice & Dyana consideration, while the benchmark team II was happened with general medication without yoga treatment. They follow the regular medication. In this study the Neurological variables such as loss or impairment of the sensory-motor and balance components of gait are get pre & post-test, through DN4. The obtained data is analysed through the matched example t test utilizing the factual examination

Investigations

Every member who went through a clinical assessment utilizing their foot feeling as per their DN4.

Treatment Protocols

The Team I underwent the Yoga treatment as indicated by the organized plan with selected set of Yogassanas such as SukshmaVyayama (PavanmuktasanaSeries) ,Surya Namaskar, Tadasana, Utkatasana, Vrikshasana, Gomukhasana, Paschimottanasana, Sarvangasana, Utthanapadasana, Ardha Matsyendrasana, Utthanapadasana, Halasana, Salabhasana ,Savasana. and Set of Breathing practice such as Kapaabhati,Nadi Shodhana, Ujjai ,Bhramari and SimhaPranayama .OM dyana consideration, while the benchmark team II was happened with general medication without yoga treatment. In this article, the data assembled are examined and analyzed using a matched model t-test.

Collection of data

DPN persons must be somewhere around 35-70 years of age. The clinical test investigated the patients' neurological factors, sensory neuropathy term, patient's impression of advantages of yoga Restorative Shows use before finding, order of yoga rehearses, overviewed, security, and viability of yoga treatment. Patients got pre-made standard structures that had been assessed by the experimenter. The patients' chronicles, analyse, and other data were recorded, alongside their socioeconomics.

- Based on Practise, Research information supports the efficacy of yoga-therapy as a form of DPN treatment. It offers objective data that supports evidence-based practise and helps to healthcare and yoga-therapy for DPN patients.
- Patients can be informed about the possible advantages and threats of yoga therapy on neurological features in DPN. It enables them to take control of healthcare and enhance quality of life.

RESULT AND ANALYSIS

Calculations in Statistics

Statistical Package for the Social Sciences (SPSS) has been used to conduct a factual investigation of the measurements.. The Rates, midpoints, and Std. deviation were utilised to describe the outcomes. From its foundations as a device for measurable examination, SPSS has developed into a popular between scholastics in a scope of highlights⁶⁴⁻⁶⁵.

Interpretation of Result

T Test for Pre & Post-test for Group I

In the studies that calculation value Min. than table value , Acknowledge Ho there exists no connection among Yoga (Team I) to DN4 for neurological factors. If calculation value max. than table value, Reject Ho there exists connection among Yoga (Team I) to sensual factors. same studies followed Team II. . Then, t table value is = 2.14,DF(degree of freedom) =14.

Table 1 T test results for Group I (Yoga pre & post-tests.)

parameter	Test	Differences					t	df	Sig.
		Mean	SD	Std. Err. Mean	Min.	Max			
DN4	Pre-Post	1.000	1.000	0.2582	0.4462	1.553	3.873	14	0.002

The examination apparatus was utilized to analyze the Team I and Team II. Table 1 shows that DN4 presents the pre & post-test worth of Yoga Treatment. The Mean Value 1.000, Error Mean. .2582 ,Std. Deviation 1.000, upper worth 1.553 , lower worth .4462 , t test 3.873, df 14 separately, brought about Sig. (2-followed) of .002, the t estimation worth of 3.873 is more noteworthy than the table worth of 2.14. For both trials of DN4 in Yoga Treatment, it is really believed that there is a significant diff. among the before and after-tests, which suggests a level of confidence of 0.05. Table 1 reveals the significant value of the DN4 pre- & post-test yoga treatment.

T Test for Pre & Post-test for Group II

The examination apparatus was utilised to analyse the Team II. Table 2 shown that DN4 presents the pre & post-test worth of absent Yoga Treatment. The Mean -.46667, Error Mean.23637 ,Std. Deviation .91548, upper worth .0403 , lower worth -.97364 , t test -1.974, df 14 separately, brought about Sig. (2-followed) of .002, the t estimation worth of -1.974 is Less noteworthy than the table worth of 2.14. For both trials of DN4 in without Yoga Treatment, it is really believed that there is a no significant diff. among the before and after-tests, which suggests a level of confidence of 0.05. Table 2 reveals the no significant value of the DN4 pre- & post-test without yoga treatment .

Table 2 T test results for Group II (Absent of Yoga pre & post-tests.)

parameter	Test	Differences					t	df	Sig.
		Mean	SD	Std. Err. Mean	Min.	Max			
DN4	Pre-Post	-.46667	.91548	.23637	-.97364	.0403	-1.974	14	.068

We inspected two gatherings; Team I showed a massive contrast, while the other Team II didn't; thus, they were surveyed for the review. Following a 12-week concentrate on period, the yoga Team DN4 for neurological factors fundamentally diminished. Team II without yoga practice shows no progressions. Nonetheless, the Benchmark Group didn't show a very remarkable contrast in DN4 levels. We noticed critical decrease neurological factors scores in Yoga gatherings. Thusly, Yoga practice were powerful in decreasing neurological elements in Team I Members. Yoga is regularly used to treat DPN. Yoga has assisted DPN patients with accomplishing improved outcomes.

Chart I Pre-test and Post-test for yoga

As per the 5A diagram examination, Patients in Team - 1 Yoga Treatment module better outcome compare the Team - 2. Three month Yoga Treatment has demonstrated to be effectual & causes huge neurological relevant in DN4.

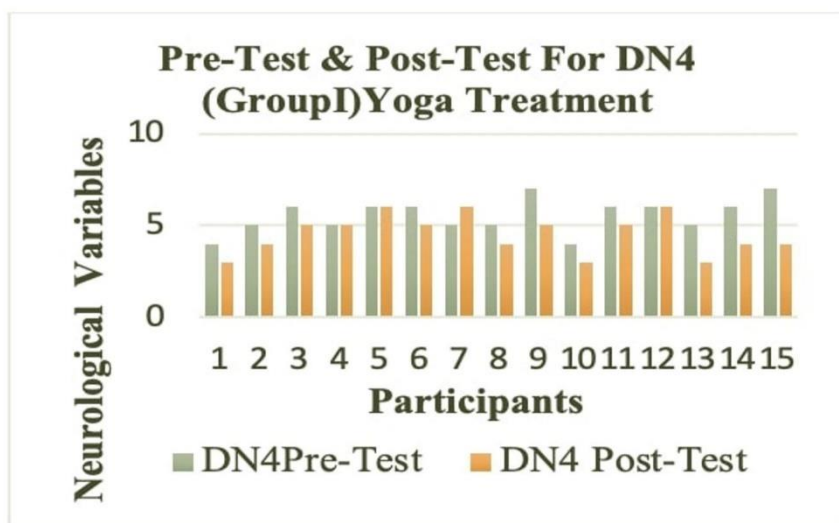


Fig. 5A: DN4 Test for Team I

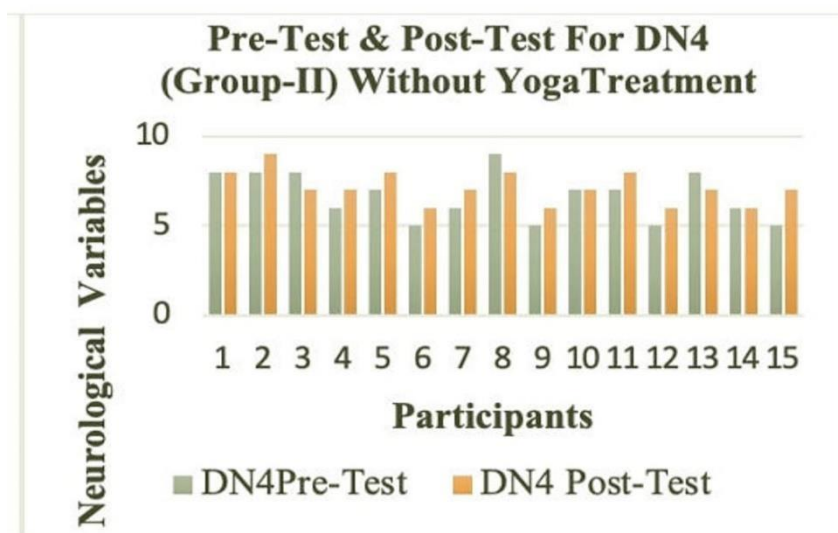


Fig. 5B: DN4 Test for Team II

In diagrams 1, the 'x' axis addressed the quantity of 15 members, while the 'y' axis addressed Neurological information including DN4. After pre-test, patients involved the yoga posture like Warm up series SukshmaVyayama (PavanmuktasanaSeries), and Surya Namaskar and set of asanas, Set of Breathing activity and Om Practice around assisting with DPN perform better neurological factors.

After post-test determination, patients' appraisals of the advantages of Yoga treatment were utilized with positive results in trial without yoga team. Charts I on the 'y' axis reflects Neurological information, DN4 pre-test process showed Green. DN4 post-test process showed Orange.

Chart II Pre & Post-test for Absent of yoga

As per the 5B diagram examination, Patients in Team – II without Yoga Treatment module be no outcome compare the Team - I. Absent of Yoga Treatment has demonstrated to be not effectual and causes no neurological relevant in DN4.

- The fundamental processes through which yoga-therapy changes neurological traits in DPN can be identified through study. This information can guide potential therapies and treatment plans and its essential for comprehending the physiological, psychological and neurological changes brought on by yoga-therapy practise.
- Findings from research is applied to improve DPN patients by yoga-therapy. It is possible to examine the effects of various yoga styles, frequencies, durations, and intensities. Using this knowledge, healthcare professionals may follow yoga-therapy methodologies to meet the needs of DPN patients.

CONCLUSION

The yoga therapy conducted for diabetic peripheral neuropathy persons as experimental group 1 and control group 2. The experiment conducted for three months for both groups. Team - 1 Yoga Treatment module better outcome compare the Team - 2. 3 month Yoga Treatment has demonstrated to be effectual and causes huge neurological relevant in DN4., considerably the functionality nerve system have been improved. Hence, The practising of yoga enhances the sensation, vitality, functionality of nerves, and stability of persons with Diabetic Peripheral Neuropathy.

Disclosure statement

The authors have no competing interests.

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