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Effectiveness Of Tango Drill On Dysthesia And Compensatory Stepping In Middle Age Diabetic Peripheral Neuropathy

J.Philomina[1], D.Dhanalakshmi[2]
(Physiotherapy, Sri Venkateshwara Medical College ,Puducherry.India)
(Physiotherapy,Sri Venkateshwara Medical College, Puducherry,India)

Abstract:
Background: *Diabetes Mellitus has been associated with earlier onset and increased severity of urological disease that often result in depleting urological complication such as urinary incontinence. It's prevalence has been estimated about 25% & 87%, this is due to neurogenic bladder caused by nerve damage secondary to increase sugar level in blood result in urinary incontinence. Posterior tibial nerve L5-S3 fibers, origin from the same spinal segments at presynaptic innervation to bladder S2-S4. TTNS stimulate tibial nerve and send impulse to sacral plexus which is responsible for bladder function thereby incontinence will reduce. The objective of the study is to find the effectiveness of transcutaneous tibial nerve stimulation on urinary incontinence among individual with type II diabetes mellitus.*
Materials and methods: *30 subjects with type II diabetes mellitus were selected based on selection criteria. The subjects will be assessed using International consultation on incontinence questionnaire and Michigan Incontinence questionnaire. The sample were categorized into Experimental group (n=15), Control group (n=15) by random sampling method. Experimental group were given TTNS and conventional exercise 30 min for 5 session per week.*
Results: *The result of the study showed that the participants of experimental group revealed a significantly greater improvement in reducing urinary incontinence and it's symptom severity. Unpaired t test with the values of both groups shows p<0.0001. Between group analysis experimental group is significant than control group.*
Conclusion: *This study concluded that experimental group received Transcuataneous tibial nerve stimulation along with conventional exercise(kegel, Aerobic walking, sensory re education) shows significant improvement in reducing urinary incontinence among type II diabetes mellitus individual than control group who received conventional therapy alone.*
Key words: *Transcutaneous tibial nerve stimulation, irinary incontinence, Type II diabetes mellitus.*

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I. Introduction

Peripheral neuropathy is a common complication seen in diabetes population.India has second largest number of people living with diabetes.People with diabetic peripheral neuropathy present with pain, pasresthesia, dysthesia(1). This occurs due to increased blood sugar (glucose) damage the blood vessel and nerves over time. Most commonly seen symptoms in diabetic peripheral neuropathy are numbness, tingling, burning, aching, cramps and weakness(5). TherapyArgentine tango therapy was reported offcially in the medical research helds in 2008 for the first time, by studying effects of a community-based Argentine tango dance program on functional balance and confidence in older adults(11)

II. Materials And Methods

Study design : a experimental study
Sampling method: randomized sampling.
Study population: middle age group between 40-60 years with diabetic peripheral neuropathy.
Study samples : 30samples
Group a=15
Group b=15
Study setting: sri venkateshwara medical college, ariyur.
Outcome measures: dysthesia, compensatory stepping.
Outcome tools: - npsi (neuropathicpainsymptominventory)
- mini bestest

Treatment duration: 1 year
Study duration: 12 weeks.
Variables:
Independent variable: tango drills
Dependent variable: dysthesia (pain) , compensatory stepping(falls)
Selection criteria:
Inclusion criteria:
* age group 45-60 years
* both male and female
* diabetic peripheral neuropathy with above 5 years
* history of falls
* dysthesia pain

Exclusion criteria:
***** balance impairment
* any visual impairment
* diabetic specific complication like foot ulcer
* no history of psychiatric disorder

Materials used: questionnaiore, data collection sheet

Procedure Methodology:

The Tango drill protocol for the experimental group was adapted and developed from original works of argentine tango in 1880s in Rio de platio. Tango simulated slips using the moving floor to show that rehabilitative dance can change how nervous system uses sensory information and muscle during balance.

Tens For Dysthesia:
Low frequency tens about 50 Hz
High frequency tens about 500 hz, 2 session /week,Placement: head of tibia, lateral malleolus

TANGO DRILL:
1. WALKING BACKWARDS: Bend standing leg _ Toes gliding over floor_ Engage through core + standing leg_ Bend standing leg _ extend working leg_ Toes glide over floor_Toes control speed while push off
2. LAPIZ AND CROSS BACK: Stand with hands on hip_ Move the right limb in half circle or circumduction movement _ followed by left limb circumduction movement
3.BACK AND FRONT CROSSED CHANGE OF WEIGHT:Alternate cross back and front movement of right and left lower limb placed one over the other.
4.PIVOT SHIFT:stand with feet together_ lateral lift of right lower limb with left limb fixed _ follows lateral lift of left limb with right fixe.

Statistical analysis:

In this study, pre and post interventional differences within the two groups were analyzed using paired 't' test and between the two groups were analyzed using unpaired 't' test for each of the outcome measures. Statistical significance was set at $p < 0.0001$. Statistical analysis was carried out by using the Microsoft window version-2008, excel spread sheet

III. Result

Between group analysis of NPSI and mini BESTest:

The mean and SD for NPSI in GROUP A is 6.8, 1.32and GROUP B is 5.06, 1.18 and the t value is 3. 650.The mean and SD for mini BESTest in GROUP A is 22, 0.05 and GROUP B is 17.8,1.46 and the t value is 2.869.The statistical analysis was done using unpaired 't' test between the groups and show statistical significance of $p<0.05$.

TABLE 1: Between the group analysis of NPSI in group A and B::

GROUPS	PRE TEST	POST TEST	T-VALUE	P-VALUE	SIGNIFICANCE
GROUP A	0.45	0.23	10.56	0.0001	<0.05
GROUP B	0.44	0,24	10.84	0.0001	<0.05

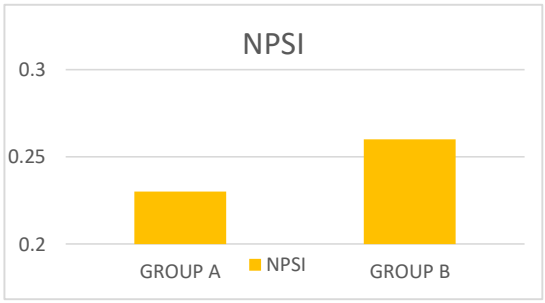
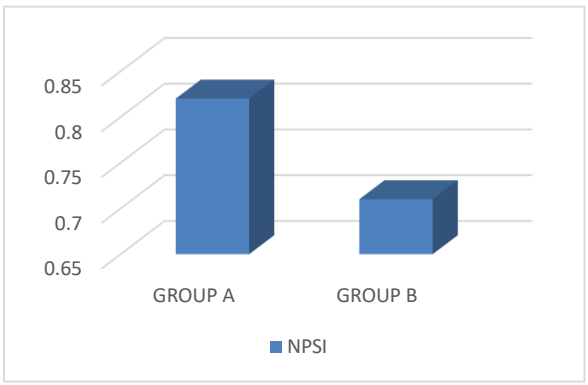


TABLE 2: between group analysis of MINIBestest in group Aand B:

GROUPS	PRE TEST	POST TEST	T-VALUE	P-VALUE	SIGNIFICANCE
GROUP A	**0.54**	**0.82**	**14.93**	**0.0001**	**<0.05**
GROUP B	**0.54**	**0.76**	**9.90**	**0.0001**	**<0.05**



IV. Discussion

This present study is the experimental study done to rule out the significance of Tango drill on dysthesia and compensatory stepping among middle age type II diabetes mellitus.

In this study 30 subjects were selected on the basis of selection criteria and grouped as experimental group (Intervention group - Tango drill) n=15; and Conventional group (Control group- Aerobic Walking) n=15; Prior to the application of treatment outcome measures such as dysthesia and compensatory stepping were assessed using the tools - NPSI assessment scale and mini BESTest. Obtained Pre and posttest values shows a significant improvement in diabetes patients intervened by the Tango drill in the experimental group, thereby it rejects the null hypothesis. The reason for the above-mentioned significance of Tango drill was discussed below. Most of the diabetic individuals experiences silent hypoglycemia and resultant nerve injury.People with sensory neuropathy may experience dysesthesia, which translates as abnormal sensation. When diabetes progress over years, people experience fall risk, when balance impairment occurs through sensory issues.This will lead to reduce compensatory stepping response.

Dysesthesia results from nerve damage. It happens when damage to the nerves causes their behavior to become unpredictable, which leads to inappropriate or incorrect signaling. These confused messages go to the brain, which is often unable to interpret them.These confused messages go to the brain, which is often unable to interpret them. Consequently, the brain chooses to respond to a sensation or combination of sensations that it knows.

Gregory scherrer& Mirrian B.Goodman Dysesthesia can be painful, but it is not a sign of tissue damage. The body tissues can remain fully functional and healthy, although prolonged misuse or lack of use due to pain and discomfort may leave them damaged

The symptoms of dysthesia include: A burning feeling under the skin , Extremely sensitive skin to the extent where clothes and bedding can cause intense pain. People with sensory neuropathy will typically have difficulty sensing causes of pain and heat which can result in unnoticed injury being sustained. Partly because the feet are less easy to see than the hands, the feet are particularly vulnerable to damage going unnoticed in people with neuropathy and developing into a serious health risk. Cuts, blisters and burns can develop into foot ulcers which raise the risk of needing amputation for people with diabetes and neuropathy.

Merkel cells sense mechanical stimuli (through Piezo2), fire action potentials, and are sufficient to activate downstream sensory neurons. Through tango drill, sensory stimuli can be modified thereby dysthesia reduced. T2DM with mild to moderate DPN demonstrated improvements in balance, proprioception, lower-limb strength, reaction time, and, consequently, a decreased risk of falling Pei-Yun Lee a, Yi-Ju Tsai described In reactive balance control, unexpected balance disturbances are detectedby the peripheral sensory receptors to elicit postural responses for balance recovery. A classical paradigm for the study of reactive balance control uses support surface perturbation to induce body sway and shows that after a short latency the trunk and leg muscles would be activated to reverse the sway . This type of balance responses are delayed and result in greater displacement of COP in older adults [8,9] and diabetes patients with neuropathy of non-specified ages.

V. Conclusion

This study concluded that Tango drill is effective in improving dysthesia and compensatory stepping among middle aged individuals with Diabetic peripheral neuropathy.

References

[1] Alan Shuldiner Md University Of Maryland. Causes Of Diabetes , National Institute Of Diabetes And Digestive & Kidney Diseases . June 2014 ,Archieved From The Original On 2 Feb 2016 Retrieved On 10 Feb 2016.

[2] Nat Rev Dis Primers. Diabetic Neuropathy. Published In Final Edited Form As:Nat Rev Dis Primers. 2019 Jun 13; 5(1): 42. Published Online 2019 Jun 13.

[3] Indian J Ophthalmol. Epidemiology Of Type 2 Diabetes In India. 2021 Nov; 69(11): 2932–2938. Published Online 2021 Oct 29.

[4] Sandra Sif Gylfadottir Et Al, The Characteristics Of Pain And Dysesthesia In Patients With Diabetic Polyneuropathy. 2022 Feb 17;17(2)

[5] Shillo P, Sloan G, Greig M, Hunt L, Selvarajah D, Elliott J, Et Al.. Painful And Painless Diabetic Neuropathies: What Is The Difference? Current Diabetes Reports. 2019;19(6):32.

[6] Hebert Hl, Veluchamy A, Torrance N, Smith Bh. Risk Factors For Neuropathic Pain In Diabetes Mellitus. Pain. 2016.

[7] Ann Med Surg (Lond). 2023 Mar; 85(3): 412–417. Published Online 2023 Mar 9. World Health Organization. Diabetes. [Last Accessed On 2021 Jun 04].

[8] J Diabetes Sci Technol. Diabetes And Reactive Balance: Quantifying Stepping Thresholds With A Simple Spring Scale To Measure Fall-Risk In Ambulatory Older Adults. 2021 Nov; 15(6): 1352–1360. Published Online 2020 Dec 23.

[9] Brain Sci. Benefits Of Tango Therapy In Alleviating The Motor And Non-Motor Symptoms Of Parkinson's Disease Patients—A Narrative Review. 2022 Apr; 12(4): 448. Published Online 2022 Mar 27.

[10] Nijkrake M.J., Keus S.H.J., Kalf J.G., Sturkenboom I.H.W.M., Munneke M., Kappelle A.C., Bloem B.R. Allied Health Care Interventions And Complementary Therapies In Parkinson's Disease. Parkinsonism Relat. Disord. 2007

[11] Hackney M.E., Earhart G.M. Effects Of Dance On Movement Control In Parkinson's Disease: A Comparison Of Argentine Tango And American Ballroom. J. Rehabil. Med. 2009;

[12] Who Global Report On Falls Prevention In Older Age. Accessed 10 May 2022.

[13] Rubenstein Lz. Falls In Older People: Epidemiology, Risk Factors And Strategies For Prevention. Age Ageing 2006;35(Suppl 2):Ii37–Ii41.

[14] Al Dawish Ma, Robert Aa, Braham R, Et Al.. Diabetes Mellitus In Saudi Arabia: A Review Of The Recent Literature. Curr Diabetes Rev 2016;12:359–368.

[15] Gregg Ew, Beckles Gl, Williamson Df, Et Al.. Diabetes And Physical Disability Among Older U.S. Adults. Diabetes Care 2000;23:1272–1277. [Pubmed]

[16] Wallace C, Reiber Ge, Lemaster J, Et Al.. Incidence Of Falls, Risk Factors For Falls, And Fall-Related Fractures In Individuals With Diabetes And A Prior Foot Ulcer. Diabetes Care 2002;25:1983–1986.

[17] Montero-Odasso M, Verghese J, Beauchet O, Et Al.. Gait And Cognition: A Complementary Approach To Understanding Brain Function And The Risk Of Falling. J Am Geriatr Soc 2012;60:2127–2136.

[18] Okubo Y, Schoene D, Lord Sr. Step Training Improves Reaction Time, Gait And Balance And Reduces Falls In Older People: A Systematic Review And Meta-Analysis. Br J Sports Med 2017;51:586–593

[19] Tao Z, Shi A, Zhao J. Epidemiological Perspectives Of Diabetes. Cell Biochem Biophys. 2015;73:181–5.