

Effect of Dynamic Exercises Utilizing PNF Patterns on Balance, Gait Speed and Fear of fall in Subjects with Diabetic Polyneuropathy

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Abstract

Background: Diabetic peripheral neuropathy is a common complication of type 2 diabetes. It presents with a symmetrical peripheral degeneration of peripheral nerves. Approximately one of three people with diabetes is affected by distal symmetric sensorimotor polyneuropathy which is associated by marked impairment in balance and quality of life due to partly excruciating neuropathic pain and foot ulcers. **Objectives:** To determine the effect of dynamic exercises utilizing PNF patterns on balance, gait speed and fear of fall in subjects with diabetic polyneuropathy. **Methods:** 30 subjects with mild diabetic polyneuropathy within the age group of 40-65 years were recruited for the study and assigned to one of the 2 groups: Group A and Group B respectively. Group A underwent dynamic exercises utilizing PNF patterns while the subjects in Group B were recommended to walk. The

treatment sessions were scheduled for 45min/day, 4 days/week for the duration of 6 weeks. Balance, Gait speed and Fear of fall were assessed prior to the treatment and post intervention at 6 weeks using Berg Balance Scale (BBS), 10 Meter Walk Test (10MWT) and Fear of Fall-International (FES-I) respectively.

Result: In Group-A, the pre and post test scores of SSV with mean and SD of 0.308 ± 0.038 and 0.342 ± 0.055 , was found to be statistically significant ($p<0.05$); FV scores with mean and SD of 0.414 ± 0.031 and 0.422 ± 0.118 , was found to be statistically non-significant ($p>0.05$); FES-I scores with mean and SD of 53.53 ± 3.29 and 35.00 ± 3.62 , was found to be statistically highly significant ($p<0.001$) and BBS scores with mean and SD of 33.00 ± 5.34 and 44.67 ± 1.49 , was found to be statistically highly significant ($p<0.001$). Similarly, in Group B, the pre and post test scores of SSV with mean and SD of 0.309 ± 0.027 and 0.357 ± 0.077 , was found to be statistically significant ($p<0.05$); FV scores with mean and SD of 0.452 ± 0.062 and 0.450 ± 0.110 , was found to be statistically non-significant ($p>0.05$); FES-I scores with mean and SD of 50.33 ± 7.97 and 49.33 ± 7.45 , was found to be statistically significant ($p<0.05$) and BBS scores with mean and SD of 36.40 ± 4.30 and 37.40 ± 4.38 , was found to be statistically significant ($p<0.05$). After comparing the post interventional scores in between the groups, scores of FES-I and BBS were found to be significant ($p<0.05$) while, the scores of SSV and FV were found to be non-significant ($p>0.05$).

Conclusion: The result showed that both the interventions were individually effective but when both the groups were compared, Group A was found to be more effective than Group B.

Keywords: Diabetic Polyneuropathy; Balance; Gait Speed; PNF