

Research Paper

Effect of 12-Week Neck, Core, and Combined Stabilization Exercises on the Pain and Disability of Elderly Patients With Chronic Non-specific Neck Pain: A Clinical Trial

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ABSTRACT

Objectives To investigate the effect of 12 weeks of neck stabilization, core stabilization, and combined stabilization exercises on pain and disability among elderly people in Tehran City, Iran.

Methods & Materials This study was a 12 weeks open-label clinical trial. A total of 18 elderly patients with chronic neck pain were randomly assigned into three groups: neck stabilization training (6 people), core stabilization training (6 people), and combined stabilization training (6 people). The severity of neck pain and disability before the beginning of the training, 8 weeks after training and one week after the completion of the exercises were measured using the Visual Analog Scale (VAS), Neck Disability Index (NDI) and Neck Pain and Disability Scale (NPDI). To investigate the effect of time, repeated measure analysis of variance was used to analyze the data in SPSS version 21.

Results The Mean±SD scores of pain before and after neck stabilization treatment were respectively 6.08±0.58, 4.83±0.52 for VAS and 49.17±2.86 and 39.17±2.79 for NDI; and 56.4±2.11 and 50.0±1.64 for NPDI; those differences between pairs were significant. The Mean±SD scores of pain before and after core stabilization treatment were respectively, 6.00±0.55, 4.92±0.20 for VAS; 49.67±1.86 and 39.17±1.94 for NDI; and 56.01±2.44, and 48.92±1.16 for NPDI; those differences between pairs were significant. Also, the Mean±SD scores of pain before and after combined stabilization treatment were respectively, 6.00±0.45, 4.00±0.32 for VAS; 49.83±2.23 and 37.17±2.86 for NDI; and 55.25±0.28 and 47.51±1.44 for NPDI; those differences between pairs were significant (P<0.05). Among the underlying variables, gender was the only significant factor in pain relief in the elderly (F=6.21, P=0.02), while other variables were not significant (P>0.05).

Conclusion The findings of this study showed that 12 sessions of neck, core, and combined stabilization training in the neck region could improve the tolerance and pain of the elderly with non-specific chronic neck pain.

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Extended Abstract

1. Objectives

Neck pain is one of the most common musculoskeletal disorders in modern societies. It is estimated that approximately 67% of people have experienced neck pain at least once in their life [1-4]. Neck pain is more prevalent in middle age and old age and can lead to severe disability in 5% of patients [5, 6]. Increased prevalence of neck pain and its related disabilities along with increasing age and health care is an important challenge for the health care system [7, 8]. Today, exercise therapy as an effective method for neck pain treatment has been accepted but is still considered as a major challenge [9]. In this regard, this study attempted to study the effect of neck stabilization, core stabilization, and combined stabilization exercises on the pain and disability of elderly patients with chronic Non-specific Neck Pain (NSNP).

2. Methods & Materials

This is an open-label trial conducted for 12 weeks on 18 elders with NSNP. They were selected using convenience sampling method and matched for gender and education. The inclusion criteria were aged between 65 and 80 years, with NSNP for 12 weeks and more, and with Visual Analog Scale (VAS) score of 3. On the other hand, the exclusion criteria were a history of neck surgery, doing regular exercises, a history of a specific disease except neck pain, mental illness, cardiovascular disease, and neurological diseases, failure to complete treatment courses, simultaneous use of other therapies, and exacerbation of pain and disability by conducting training exercises. The participants were divided into three groups of neck stabilization (n=6), core stabilization (n=6), and combined stabilization exercises (n=6). Training sessions were conducted under the supervision of a physiotherapist every other day for 12 weeks, each session lasted 25–30 minutes. By using VAS, Neck Disability Index (NDI), and Neck Pain and Disability Scale (NPDS), the severity of neck pain and disability before the beginning of exercises was measured at the end of the 8th week and one week after the completion of the exercises.

3. Results

Of 18 participants, 39.9% were female and 60.1% male with a Mean±SD age of 68.28±4.61 years. According to the results, neck stabilization exercises significantly reduced neck pain over time (P=0.008) where the Mean±SD pain VAS score reduced from 6.08±0.58 at the beginning of the study to 4.83±0.52 at 12 weeks after the treatment.

The pain NDI and NPDS mean scores also reduced about 10 and 6.39 units, respectively (P<0.001). Using core stabilization exercises, the pain VAS score reduced 1.08 unit (P=0.018), while pain NDI and NPDS scores reduced 10.5 and 7.09 units, respectively (P=0.000). Finally, the use of combined stabilization exercises, the pain VAS, NDI, and NPDS scores significantly reduced 2, 12.66, and 7.77 units, respectively (P<0.001).

The pain VAS, NDI and NPDS Mean±SD scores in core stabilization group before and after intervention were 6±0.55 and 4.92±0.2; 49.1±67.86 and 39.17±1.94; 56.01±2.44 and 48.92±1.16, respectively (P<0.05). In combined stabilization group, these values were 6±0.45 and 4±0.32; 49.2±83.23 and 37.17±2.86; and 55.25±0.28 and 47.51±1.44, respectively (P<0.05).

Comparing VAS and NDI scores, the difference in pain score between the pre-workout, 8 weeks and 12 weeks after the workout was significant by considering the effect of underlying factors and groups (P<0.001). The difference in pain reduction between the study groups by using NDI was significant (P=0.043). By using NDI, gender factor (P=0.02) had a significant effect on the elderly's pain reduction. By using NPDS, pain reduction was also significant over time (P<0.001). The difference in pain reduction between study groups was also significant (P=0.039).

4. Conclusion

Twelve weeks of neck stabilization, core stabilization, and combined stabilization exercises resulted in a significant improvement in the mean reduction in VAS, NDI and NPDS pain scores in the elderly with chronic NSNP. Among underlying factors, only the gender factor had a significant effect on their pain reduction. The findings also showed that the mean pain reduction in combined stabilization exercises was higher than in the neck and core stabilization exercises.

Ethical Considerations

Compliance with ethical guidelines

This study complied with ethical policy of University of Social Welfare and Rehabilitation Sciences (IR.USWR. REC.1396.156). This study was registered in Iranian Registry of Clinical Trials (IRCT20180412039280N2).

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Authors' contributions

All authors contributed in designing, running, and writing all parts of the research.

Conflict of interest

The authors declared no conflict of interest.

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