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The effects of neuromuscular exercises for pelvic alignment versus standard exercises for hip joint mobility on shoulder range of motion and torque production – a randomized blinded control group study

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The effect of lower extremity motion restriction on contralateral shoulder mobility is shown in the literature. This study compared the effects of a neuromuscular exercise for pelvic alignment with the standard active hip Range of Motion (ROM) exercises on contralateral shoulder Internal Rotation (IR) ROM and Torque Production (TP). 42 subjects, with positive Ober's test on one side and limited shoulder IR on the contralateral side, were recruited and randomly assigned to either control, standard or neuromuscular treatment groups. The neuromuscular treatment involved simultaneous contraction of hamstrings, hip adductors, transverse abdominis, and diaphragm to improve pelvic alignment. The standard treatment involved active ROM exercises for the hip in all directions. In the neuromuscular group, there was 11° increase ($p=0.002$) in contralateral shoulder IR, which was significantly higher than the standard ($p=0.04$) or control ($p=0.004$) groups; there was 19% improvement ($p=0.005$) in ratio of shoulder IR/ER; there was a significant decrease in bilateral IR discrepancy (9.85°; $p=0.003$) compared to the standard (1.63°; $p=0.47$) or control group (-0.21°; $p=0.926$). Pelvic alignment had the highest correlation ($rpb=0.50$; $p=0.001$) with; and accounted for 33% ($R^2=0.33$; $p=0.001$) of changes in contralateral shoulder IR ROM. In none of the groups, a statistically significant change in IR or ER torque production ($p>0.05$) was found. In conclusion, pelvic malalignment should be considered when treating shoulder disorders; and neuromuscular treatment for pelvic alignment is more effective for improving shoulder IR deficit than emphasizing on hip joint only.

Biography

Mohammad Reza Nourbakhsh is currently working as a Professor of Physical Therapy at University of North Georgia. He earned his PhD in Physical Therapy from University of Iowa in 1993. In 2005, he became an ABPTS Board Certified Clinical Specialist in Orthopedics. His research emphasizes use of alternative treatments for treating musculoskeletal problems. He has about 24 publications related to assessment and treatment of musculoskeletal disorders. He is a Founding Member of the Fascia Research Society; and has been serving as an Editorial Board Member of the *Physical Treatments – Specific Physical Therapy Journal* and *Journal of Clinical Physiotherapy Research*.

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