

ACUTE EFFECTS OF NEURAL GLIDING ON ATHLETIC PERFORMANCE

Andy Waldhelm, PT, PhD¹

Marissa Gacek¹

Hannah Davis¹

Christy Saia¹

Brock Kirby¹

ABSTRACT

Background: Neural mobilization has been used to treat individuals with musculoskeletal and neuromuscular pathologies, but research on neural mobilization in sports rehabilitation is scarce. Furthermore, there have been no studies investigating the effects of neural gliding on sport performance.

Purpose/Hypothesis: The purpose of this study was to examine the differences between the acute effects of sciatic nerve gliding and lower extremity dynamic stretching exercises on hamstring flexibility and athletic performance.

Study Design: A cross-sectional, quasi-experimental design with block assignment was used.

Methods: Twenty-seven (16 males, 11 females, age: 23.6 ± 2.65 , height (m): 1.74 ± 0.12 , weight (kg): 73.73 ± 16.09) healthy college students volunteered for the study. The neural gliding group had 14 subjects and the dynamic stretching group had 13 subjects. Participants performed a jogging or walking up stairs warm up at a self-selected pace prior to testing. Baseline data was obtained for each of the following measurements: bilateral hamstring flexibility using the active straight leg raise test measured by a digital inclinometer, vertical jump height, 20-yard shuttle run and 10 and 20-yard dash sprint. The participants then performed one of the assigned five-minute stretching protocol, bilateral sciatic neural gliding or dynamic stretching of the lower extremities, followed by the post-test data collection of the same measures.

Results: There were no significant group by time interaction for any of the six measurements (2 x 2 repeated measures ANOVA). However, significant time differences, pre-test vs post-test for all participants as one group, for right hamstring length ($p = .001$), left hamstring length ($p = .002$) and vertical jump ($p = .028$) were observed. Post hoc paired t-tests found a significant increase between the pre and post-tests in right hamstring flexibility, ($p = .011$) in the dynamic stretching group and left hamstring flexibility of participants in the neural gliding condition, ($p = .004$). When analyzing the groups individually, pre-test vs post-test, a significant difference in vertical jump was not observed in either group.

Conclusion: Similar improvement in hamstring flexibility with both dynamic stretching and neural gliding exercises without a negative effect on three sports performance tests was demonstrated. Therefore, athletic performance will not be negatively affected by a pre-participation warm-up which includes neural gliding, but more research is needed.

Level Of Evidence: Level 3

Key Words: Athletic performance, dynamic stretching, Hamstring flexibility, movement system, neural gliding, stretching

CORRESPONDING AUTHOR

Andy Waldhelm, PT, PhD

University of South Alabama

Department of Physical Therapy

5721 USA Drive North

Mobile, AL, USA 36688

Phone: 225-328-3890

E-mail: awaldhelm@southalabama.edu

¹ Department of Physical Therapy, University of South Alabama, Mobile, AL, USA

Conflicts of Interests: None of the authors have affiliations with any organization with a financial interest in the material discussed in this manuscript.