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Research article

**Acute Effects of Static and Dynamic Stretching on Balance, Agility, Reaction Time and Movement Time**Dimitris Chatzopoulos<sup>1</sup>,  Christos Galazoulas<sup>1</sup>, Dimitrios Patikas<sup>2</sup>, Christos Kotzamanidis<sup>1</sup>[Author Information](#)[Publish Date](#)[How to Cite](#)[Email link to this article](#)

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[Full Text](#)[PDF](#)**ABSTRACT**

The purpose of this study was to compare the acute effects of three different stretching protocols on balance, agility, reaction time and movement time of the upper limbs. Participants were thirty one female high school athletes (age = 17.3 ± 0.5 yr.). All participants performed one of the following protocols on different days: (a) 3 min jogging followed by 7 min static stretching (SS), (b) 3 min jogging followed by 7 min dynamic stretching (DS), and (c) 3 min jogging followed by 7 min of rest (NS). After the protocols participants performed the following tests: dynamic balance, 505 agility test, reaction time (time between a sound stimulus and release of a button) and movement time (movement of the upper extremity over a 0.5 m distance). The order of stretching protocols and performance tests were counterbalanced to avoid carryover effects. Repeated measures analysis of variance revealed significant main effects for all variables except reaction time. The DS protocol compared to SS performed significantly better in balance, agility and movement time. Additionally, the DS protocol compared to NS performed significantly better in agility. According to the results of the study, a DS protocol is more appropriate than SS for activities that require balance, rapid change of running direction (agility) and movement time of the upper extremities.

**Key words:** Warm-up exercise, muscle stretching exercises, sports performance, adolescents

### Key Points

- Static stretching has a negative effect on balance and agility performance compared to dynamic stretching.
- There was no effect of the stretching protocols on reaction time.
- Dynamic stretching was more effective than static stretching for increasing movement time of the upper extremities.

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