

STATIC STRETCHING CAN IMPAIR EXPLOSIVE PERFORMANCE FOR AT LEAST 24 HOURS

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ABSTRACT

Haddad, M, Dridi, A, Chtara, M, Chaouachi, A, Wong, DP, Behm, D, and Chamari, K. Static stretching can impair explosive performance for at least 24 hours. *J Strength Cond Res* 28(1): 140–146, 2014—The aim of this study was to compare the effects of static vs. dynamic stretching (DS) on explosive performances and repeated sprint ability (RSA) after a 24-hour delay. Sixteen young male soccer players performed 15 minutes of static stretching (SS), DS, or a no-stretch control condition (CC) 24 hours before performing explosive performances and RSA tests. This was a within-subject repeated measures study with SS, DS, and CC being counterbalanced. Stretching protocols included 2 sets of 7 minutes 30 seconds (2 repetitions of 30 seconds with a 15-second passive recovery) for 5 muscle groups (quadriceps, hamstring, calves, adductors, and hip flexors). Twenty-four hours later (without any kind of stretching in warm-up), the players were tested for the 30-m sprint test (with 10- and 20-m lap times), 5 jump test (5JT), and RSA test. Significant differences were observed between CC, SS, and DS with 5JT ($F = 9.99$, $p < 0.00$, effect size [ES] = 0.40), 10-m sprint time ($F = 46.52$, $p < 0.00$, ES = 0.76), 20-m sprint time ($F = 18.44$, $p < 0.000$, ES = 0.55), and 30-m sprint time ($F = 34.25$, $p < 0.000$, ES = 0.70). The significantly better performance ($p < 0.05$) was observed after DS as compared with that after CC and SS in 5JT, and sprint times for 10, 20, and 30 m. In contrast, significantly worse performance ($p < 0.05$) was observed after SS as compared with that after CC in 5JT, and sprint times for 10, 20, and 30 m. With RSA, no significant difference was observed between different stretching protocols in the total time ($F = 1.55$, $p > 0.05$), average time ($F = 1.53$, $p > 0.05$), and fastest time ($F = 2.30$, $p > 0.05$), except for the decline index ($F = 3.54$, $p < 0.04$, ES = 0.19). Therefore,

the SS of the lower limbs and hip muscles had a negative effect on explosive performances up to 24 hours poststretching with no major effects on the RSA. Conversely, the DS of the same muscle groups are highly recommended 24 hours before performing sprint and long-jump performances. In conclusion, the positive effects of DS on explosive performances seem to persist for 24 hours.

KEY WORDS soccer, stretching protocols, jump, repeated sprint

INTRODUCTION

Static stretching (SS) was considered an essential component of a warm-up for decades (39) to improve performance. Traditionally, after a submaximal aerobic component (i.e., running, cycling), the second component was a bout of SS (39). The SS usually involves moving a joint to the end of its range of motion (ROM) and holding the stretched position for 15–60 seconds (39). The SS has been demonstrated as an effective means to increase ROM (26). This bout of stretching is commonly followed by a segment of skill rehearsal where the players would perform dynamic movements similar to the sport or event for which they were preparing (39). A review by Behm and Chaouachi (2) summarized the plethora of studies reporting that SS can lead to impairments in subsequent performance. However, they highlighted the greater variability in the findings with shorter durations of stretching (<90 seconds per muscle group). In addition, SS does not lead to such pervasive negative effects with sprinting and running activities (13,34).

Recently, many studies have shown that a moderate duration of stretching (15–30 seconds of SS per muscle group) does not affect short-term muscle strength (8,24). In contrast, studies implementing 30 (36), 60 (34), or 90 seconds (29) resulted in decreased jump height. In the same context, other studies have shown that SS before a competition is harmful for strength, speed, and jumping performances (5). Presently, the overwhelming consensus is against SS before subsequent performance, especially involving higher velocities and power.

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