Comparative study of gender-related muscle quality and spinal flexibility in athletes

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Keywords: Muscle and flexibility quality of the spine; Spinal mouse; Athletes Objective. – Compare muscle quality and spinal flexibility of athletes by gender, based on physical examination and Spinal Mouse®.

Subjects and method. – One hundred and ten healthy competition-level athletes, mean age 25.8±7 years, 74 men, 36 women, volunteered to participate in this study. Clinical data recorded included: weight, height, body mass index, finger-floor distance (FFD), popliteal angle (PA), trochanteromalleolar angle (TMA), heel-buttock-distance (HBD), modified Shober index (MSI), Biering-Sorensen score (BSS), Shirado score (SS). Spinal Mouse® software was applied to explore spinal curvatures and mobility.

Results. – There was a significant difference (P<0.05) or very significant difference (P<0.001), in favour of female athletes, for FFD, TMA, PA, and HBD demonstrating greater flexibility of the sub-pelvic anterior and posterior muscle systems. The MSI was better in men (P<0.05) [1]. However spinal endurance capacities of the extensor-flexor muscles was better in women (204 ± 77s and 272 ± 206s versus 141 ± 60s and 191 ± 108s for BSS and SS respectively). The difference between the two sexes was very significant (P<0.001 and P<0.01). The Spinal mouse® found a significantly greater lumbar curve and mobility in women (P<0.05).

Discussion. – In agreement with the literature, this study confirms that athletes exhibit better qualities of sub-pelvic muscle flexibility. The endurance capacity of spinal muscles appears to be greater in women not only for the flexors but also for the extensors (30%). One of the hypotheses put forward to explain the superiority of spinal muscular endurance in women holds that anthropometric differences are gender-dependent, that lumbar lordosis increases providing a mechanical advantage for extensor. It can also be hypothesised that better adaptation to spinal muscle work results from the presence of a higher proportion of type I slow fibers [1].

Reference


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