研究業績　英文表記

和文	
表題	4 週間の高強度と低強度ストレッチング介入のクロスエデュケーション効果の検討
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英文	
Title	Cross-education effect of 4-week high- or low-intensity static stretching intervention programs on passive properties of plantar flexors
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Abstract	This study aimed to compare the cross-education effect of unilateral stretching intervention programs with two different intensities (high- vs. low-intensity) on dorsiflexion range of motion (DF ROM), muscle stiffness, and muscle architecture following a 4-week stretching intervention. Twenty-eight healthy males were randomly allocated into two groups: a high-intensity static stretching (HI-SS) intervention group (n = 14; stretch intensity 6-7 out of 10) and a low-intensity static stretching (LI-SS) intervention group (n = 14; stretch intensity 0-1 out of 10). The participants were asked to stretch their dominant leg (prefer to kick a ball) for 4 weeks (3 × week for 3 × 60 s). Before and after the intervention, the non-trained leg passive properties (DF ROM, passive torque, and muscle stiffness) of the plantar flexors and the muscle architecture of the gastrocnemius medialis (muscle thickness, pennation angle, and fascicle length) were measured. Non-trained DF ROM and passive torque at DF ROM were significantly increased in the HI-SS group ($p < 0.01$, $d = 0.64$, 50.6%, and $p = 0.044$, $d = 0.36$, 18.2%, respectively), but not in the LI-SS group. Moreover, there were no significant changes in muscle stiffness and muscle architecture in both groups. For rehabilitation settings, a high-intensity SS intervention is required to increase the DF ROM of the non-trained limb. However, the increases in DF ROM seem to be related to changes in stretch tolerance and not to changes in muscle architecture or muscle stiffness.
keyword	Muscle stiffness; Non-local effect; Range of motion; Resistance training; Stretch training; Stretching intensity; Ultrasound.

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