

## 研究業績 英文表記

和文	
表題	20 分間のホットパック療法による継続的変化の検討
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英文	
Title	Time-Course Changes in Dorsiflexion Range of Motion, Stretch Tolerance, and Shear Elastic Modulus for 20 Minutes of Hot Pack Application
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Abstract	<p>The application of thermal agents via hot packs is a commonly utilized method. However, the time-course changes in the range of motion (ROM), stretch sensation, shear elastic modulus, and muscle temperature during hot pack application are not well understood. This study aimed to investigate the time-course changes in these variables during a 20-minute hot pack application. Eighteen healthy young men (<math>21.1 \pm 0.2</math> years) participated in this study. We measured the dorsiflexion (DF) ROM, passive torque at DF ROM (an indicator of stretch tolerance), and shear elastic modulus (an indicator of muscle stiffness) of the medial gastrocnemius before and every 5 minutes during a 20-minute hot pack application. The results showed that hot pack application for <math>\geq 5</math> minutes significantly (<math>p &lt; 0.01</math>) increased DF ROM (5 minutes: <math>d = 0.48</math>, 10 minutes: <math>d = 0.59</math>, 15 minutes: <math>d = 0.73</math>, 20 minutes: <math>d = 0.88</math>), passive torque at DF ROM (5 minutes: <math>d = 0.71</math>, 10 minutes: <math>d = 0.71</math>, 15 minutes: <math>d = 0.82</math>, 20 minutes: <math>d = 0.91</math>), and muscle temperature (5 minutes: <math>d = 1.03</math>, 10 minutes: <math>d = 1.71</math>, 15 minutes: <math>d = 1.74</math>, 20 minutes: <math>d = 1.66</math>). Additionally, the results showed that hot pack application for <math>\geq 5</math> minutes significantly (<math>p &lt; 0.05</math>) decreased shear elastic modulus (5 minutes: <math>d = 0.29</math>, 10 minutes: <math>d = 0.31</math>, 15 minutes: <math>d = 0.30</math>, 20 minutes: <math>d = 0.31</math>). These results suggest that hot pack application for a minimum 5 minutes can increase ROM and subsequently decrease muscle stiffness.</p>
keyword	Thermal agents, stretch sensation, muscle stiffness, passive torque, muscle temperature

※本データの英文表記は実際の論文上の表記とは異なります。