

## 研究業績 英文表記

| 和文          |  |
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| 表題          | スタティックストレッチングとフォームローラー(振動を含め)が及ぼす効果の検討   |
| 著者名         | 中村雅俊 <sup>1)</sup> , Konrad A <sup>2)</sup> , 笠原一希 <sup>1)</sup> , 吉田麗玖 <sup>1)</sup> , 村上優太 <sup>1)</sup> , 佐藤成 <sup>1)</sup> , 相澤広大 <sup>1)</sup> , 小泉亮馬 <sup>1)</sup> , Wilke J <sup>3)</sup>   |
| 所属          | 1) 新潟医療福祉大学<br>2) University of Graz<br>3) Goethe University Frankfurt   |
| 英文          |  |
| Title       | The combined effect of static stretching and foam rolling with or without vibration on the range of motion, muscle performance, and tissue hardness of the knee extensor   |
| Author      | Nakamura M <sup>1)</sup> , Konrad A <sup>2)</sup> , Kasahara K <sup>1)</sup> , Yoshida R <sup>1)</sup> , Murakami Y <sup>1)</sup> , Sato S <sup>1)</sup> , Aizawa K <sup>1)</sup> , Koizumi R <sup>1)</sup> , Wilke J <sup>3)</sup>  |
| Affiliation | 1) Niigata University of Health and Welfare<br>2) University of Graz<br>3) Goethe University Frankfurt   |
| Abstract    | <p>Although the combination of static stretching (SS) and foam rolling (FR) is frequently used for warm-up in sports, the effect of the intervention order is unclear. This study compared mechanical tissue properties, pain sensitivity, and motor function after SS and FR (with and without vibration) performed in different orders. Our randomized, controlled, crossover experiment included 15 healthy male subjects (<math>22.5 \pm 3.3</math> years) who visited the laboratory 5 times (inactive control condition, FR + SS, FR<sub>vibration</sub> + SS, SS + FR, and SS + FR<sub>vibration</sub>) with an interval of <math>\geq 48</math> hours. In each session, subjects completed three 60-second bouts of FR and SS, targeting the anterior thigh. Pressure pain threshold, tissue hardness, knee flexion range of motion (ROM), maximal voluntary isometric (MVC-ISO), and concentric (MVC-CON) torque, as well as countermovement jump height, were determined before and after the intervention. All interventions significantly (<math>p &lt; 0.01</math>) increased knee flexion ROM (<math>d = 0.78</math>, <math>d = 0.87</math>, <math>d = 1.39</math>, and <math>d = 0.87</math>, respectively) while decreasing tissue hardness (<math>d = -1.25</math>, <math>d = -1.09</math>, <math>d = -1.18</math>, and <math>d = -1.24</math>, respectively). However, MVC-ISO torque was significantly reduced only after FR + SS (<math>p = 0.05</math>, <math>d = -0.59</math>). Our results suggest that SS should be followed by FR when aiming to increase ROM and reduce tissue hardness without concomitant stretch-induced force deficits (MVC-ISO, MVC-CON, and countermovement jump height). Additionally, adding vibration to FR does not seem to affect the magnitude of changes observed in the examined outcomes.</p> |
| keyword     | isometric contraction, concentric contraction, warm-up routine, stretch-induced force deficits   |

※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。