MUSCLE AND SKIN PERFUSION OVER THE ISCHIAL TUBEROSITIES IN RESPONSE TO WHEELCHAIR TILT AND RECLINE IN PEOPLE WITH SPINAL CORD INJURY

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ABSTRACT

The purpose of this study was to compare the efficacy of wheelchair tilt-in-space and recline on enhancing muscle and skin perfusion over the ischial tuberosities in people with spinal cord injury (SCI). A repeated measures and before-after trial design was used in this study. A total of 20 power wheelchair users with SCI were recruited into this study. Six combinations of wheelchair tilt-in-space and recline angles were presented to participants in a random order. The testing protocol consisted of a baseline 5 min sitting with no tilt/recline and 5 min positioned in tilted and reclined position at each of 6 conditions, including: (1) 15° tilt-in-space and 100° recline, (2) 25° tilt-in-space and 100° recline, (3) 35° tilt-in-space and 100° recline, (4) 15° tilt-in-space and 120° recline, (5) 25° tilt-in-space and 120° recline, and (6) 35° tilt-in-space and 120° recline. Muscle and skin perfusion was assessed by near-infrared spectroscopy and laser Doppler flowmetry, respectively. Our results showed that muscle perfusion was significantly increased at 25° and 35° tilt-in-space when combined with 120° recline and skin perfusion was significantly increased at 3 tilt-in-space angles (15°, 25°, 35°) when combined with 120° recline and at 35° tilt-in-space when combined with 100° recline ($P<.05$). Even in the positions of increased muscle perfusion and skin perfusion (25° and 35° of tilt-in-space combined with 120° of recline), the amount of muscle perfusion change was significantly lower than the amount of skin perfusion change ($P<.05$).

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