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Research article

Three Intermittent Sessions of Cryotherapy Reduce the Secondary Muscle Injury in Skeletal Muscle of Rat

Nuno M. L. Oliveira, Elaine P. Rainero, Tania F. Salvini

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ABSTRACT

Although cryotherapy associated to compression is recommended as immediate treatment after muscle injury, the effect of intermittent sessions of these procedures in the area of secondary muscle injury is not established. This study examined the effect of three sessions of cryotherapy (30 min of ice pack each 2h) and muscle compression (sand pack) in the muscle-injured area. Twenty-four Wistar rats (312 ± 20g) were evaluated. In three groups, the middle belly of tibialis anterior (TA) muscle was injured by a frozen iron bar and received one of the following treatments: a) three sessions of cryotherapy; b) three sessions of compression; c) not treated. An uninjured group received sessions of cryotherapy. Frozen muscles were cross- sectioned (10 µm) and stained for the measurement of injured and uninjured muscle area. Injured muscles submitted to cryotherapy showed the smallest injured area (29.83 ± 6.6%), compared to compressed (39.2 ± 2.8%, p= 0.003) and untreated muscles (41.74 ± 4.0%, p = 0.0008). No difference was found between injured compressed and injured untreated muscles. In conclusion, three intermittent sessions of cryotherapy applied immediately after muscle damage was able to reduce the secondary muscle injury, while only the muscle compression did not provide the same effectiveness.

Key words: Tibialis anterior, hypothermia, damage

Key Points

- Three sessions of cryotherapy (30 min each 2 hours) applied immediately after muscle damage reduce the secondary muscle injury.
- Sessions of compression applied after muscle damage are not able to reduce the secondary muscle injury.