80. THE EFFECT OF DIFERENT WARM-UP IN HANDBALL: TERMOGRAPHY ANALYSIS

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Introduction

The warm-up is designed to elevate core body temperature and is primarily performed to increase the range of motion at a joint or group of joints (Knudson, 2008). It is well accepted that generalized warm-up movements are important to maximizing sport performance and reduce injury risk (Dumitru, 2010). Therefore, this is essential to understand the effects of different warm-ups on the handball events. The aim of this study was to assess the temperature changes between the muscles deltoid anterior and posterior in response of different warm-ups in handball.

Methods

21 male handball university players (age: 20.64±1.27 years old; weight: 68.93±7.14 kg; height: 1.72±0.10 m; BMI: 22.89±2.04 Kg.m^2). The mean skin temperatures were measured by a camera Flir I60 Thermal Imaging Infrared Camera. Emissivity used to collect the data was 0.98.The termographic images were measured at 2 meters distance to the subjects, and 1.20 m of height of the anterior and posterior part of the body in the muscles anterior deltoid and posterior deltoid. 10 subjects (Group A) performed a thermography measurement: 1) before the warm-up; 2) after the warm-up; 3) after a handball game; and 11 subjects (Group B) performed a thermography measurement: 1) before the warm-up; 2) after 8 minutes of pause and 3) after a handball game.

Results

The results showed that skin temperature of both muscles decrease after the warm-up and increase slightly after the handball game in both groups (table 1). With the 8´pause for the group B the results in the handball game after the pause increased in the deltoid anterior (33.68ºC) and deltoid posterior (33.75ºC) comparing after warm-up in the group B.

Table 1: Skin temperature for the anterior deltoid and posterior deltoid.

	Test Conditions				
Group	**Before warm-up** ***anterior/posterior***	**After warm-up** ***anterior/posterior***	**Handball game** ***anterior/posterior***	**8´ Pause** ***anterior/posterior***	**Handball game** ***anterior/posterior***
A	34.38ºC / 34,44 ºC	32.01ºC / 32.55ºC	33.56ºC / 33.75ºC	----	----
B	34.26 ºC / 34.82 ºC	31.63ºC/ 33.71ºC	-----	x	33.68ºC / 33.75ºC

Conclusion

This study showed significant variations of the skin temperatures according to the different conditions of warm-up, suggesting the possibility of use thermographic images to improve the knowledge of the warm-up effects and to determine the anatomic location of the muscle injury.

References

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