

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

Sá, G. ¹; Louro, H. ^{1,2}; Conceição, A. ^{1,2}

¹ Sport Sciences School of Rio Maior, Rio Maior, Portugal

² CIDESD- Research Center in Sports Sciences, Health and Human Development, Vila Real, Portugal

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.m²). 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 thermographic 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 (33.68°C) and deltoid posterior (33.75°C) comparing after warm-up in the group B.

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

Group	Test Conditions				
	Before warm-up anterior/posterior	After warm-up anterior/posterior	Handball game anterior/posterior	8' Pause anterior/posterior	Handball game anterior/posterior
A	34.38°C / 34.44 °C	32.01°C / 32.55°C	33.56°C / 33.75°C	----	----
B	34.26 °C / 34.82 °C	31.63°C/ 33.71°C	-----	x	33.68°C / 33.75°C

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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