

**TOPIC:** 1st day: From ancient Olympia to Modern Times: The History of military sports

**TITLE:** Physiological strain of the Dendra panoply wearer during a day in the Trojan War

**AFFILIATION:** FAME Laboratory, Department of Exercise Science, University of Thessaly, Greece

**INTRODUCTION:** Sixty years ago, a 3500 year old suit of bronze armour was discovered near the village of Dendra, a few km from ancient Mycenae, in Southern Greece.<sup>1</sup> This is the only complete suit of armour from the European Late Bronze Age. However, it remained unknown whether the armour was suitable for extended use in battle or was purely ceremonial. This had limited our understanding of the ancient Greek and Late Bronze Age warfare and its consequences that have underpinned the social transformations of prehistoric Europe and the Eastern Mediterranean. In this series of studies we investigated whether the armour found at Dendra was compatible with use in combat or whether it was purely ceremonial.

**METHODS AND RESULTS:** A group of special armed-forces personnel wearing an accurate replica of the armour were able to complete the 11-hour simulated Late Bronze Age combat protocol that we developed from a series of studies based on the available evidence. Numerical simulation of the thermal exchanges in Late Bronze Age warfare extended this conclusion across different environmental conditions and fighting intensities.

**DISCUSSION AND CONCLUSION:** This work could be considered as the starting point of archaeo-physiological research, where expertise in archaeology and history are combined with modern physiological knowledge and numerical simulation to address unresolved questions of ancient life. To facilitate and promote research in this field, we developed a freely-available software enabling simulation of the thermal exchanges in Late Bronze Age warfare.

**PRACTICAL IMPLICATIONS FOR CISM:** NON APPLICABLE

**CONFLICT OF INTEREST:** The authors report no relevant conflicts of interest.

**PRESENTATION TYPE:** Oral

**AUTHORS:** Andreas D. Flouris, Stavros B. Petmezas, Panagiotis I. Asimoglou