Musculoskeletal stress markers in Portuguese Late Neolithic population: What do they tell us?
Ana Maria Silva
Centro de Investigação em Antropologia e Saúde
Department of Anthropology, University of Coimbra
3000 – 056 Coimbra (Portugal)
amgsilva@antrop.uc.pt

Introduction
The daily life of ancient human populations continues to be of immense interest. In Portugal, human remains dated to the Late Neolithic are common and usually uncovered from collective burial places, containing a high number of fragmentary and commingled human bones.

This contribution includes the analysis of skeletal markers of occupational stress (MSM) in Portuguese Late Neolithic Populations.

Material
This study includes seven skeletal samples uncovered from Late Neolithic Portuguese collective burials (Figure 1), representing a minimum number of 698 adult individuals. The human remains were recovered with no or almost none anatomical connection due to the burial practices, post-deposition activities and excavations with old methodologies.

Results and Discussion
This research detected a low level of MSM in Portuguese Late Neolithic Population. The few pathological alterations observed in the muscle/ligament attachment sites are largely robusticity markers (scored as \(\leq 3\)).

In the upper limb the highest scores were obtained for the costoclavicular ligament (Figure 2) followed by the pectoralis major (Figure 3); The use of this muscle and ligament is consistent with movements requiring an alternating rotary motion of the shoulder girdle, a movement that has been interpreted as the likely result of using a double-bladed paddle in a boat. All the samples are near the coast line so fishing would be an expected activity. However, the few isotopic results available indicates a mainly terrestrial diet.

In the lower limb the highest scores were obtained for the patella ligament (Figure 4) and Achilles tendon (Figure 5), respectively 11% and 23% of the analysed bones displayed some degree of exostosis. The former is related to extension of the leg. The last one is responsible for plantar flexion of the ankle and is the primary motor for standing and walking on the toes as powers push off when a person runs or jumps. These data suggests a great mobility of these individuals. Previous studies revealed other indicators, as low femoral neck-shaft angle, that seems to indicate that these populations displayed a greater mobility that the one normally associated with agriculture.

Final remarks
The poor preservation and incompleteness of Portuguese Late Neolithic commingled human remains prevents an accurate study of MSM. Even if it was not possible to confirm the daily activities of these human populations or to test sex differences or bilateral asymmetry, some trends were recognize, as the most utilized muscle/ligaments of the their upper and lower extremities.

Acknowledgments: Sofia Wasterlain and Centro de Investigação em Antropologia e Saúde