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The stout navicular bones from the the Middle Pleistocene site of Sima de los Huesos (Atapuerca, Burgos, Spain)

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In the *Homo* fossil record is not frequent the existence of foot remains prior to Neandertals and modern humans. Some navicular bones have been previously described (e.g. Jinniushan, OH8 and LB1). However, it is unknown when the modern morphology of the navicular has arisen. Trinkaus [1] established a modern morphology of the Neandertal foot indistinguishable of modern humans in the implied locomotor capabilities. Nevertheless, this author established a great navicular tuberosity and a general robusticity for this bone in Neandertals relative to modern humans. In the Middle Pleistocene site of Sima de los Huesos (SH) 25 navicular bones have been recovered, which represent nearly the half of the *Homo* fossil record prior to *Homo sapiens*. The sample of navicular bones from SH corresponds to a minimum number of individuals of 14, what represent the half of the 28 individuals identified in the whole sample [2]. Luminescence and paleomagnetic dating suggest a minimum age for the SH hominins of 430 ka [3]. This date is in broad agreement with the evidence provided for the ancient mitochondrial DNA [4]. Due to the evolutionary and morphological relationship between Neandertals and the Sima de los Huesos hominins, important information can be extracted from the SH navicular bones that is relevant to understanding the evolution of the Neandertal foot. The analysis of 14 metrical variables in the huge collection of the navicular bones from the Sima de los Huesos site allows us establishing similarities or differences with other samples/populations. The navicular of the Sima de los Huesos, as that of Neandertals, is robust, very broad and with a significantly wide talar articular facet. However the navicular bones from the Sima de los Huesos show significant differences in the minimum interarticular thickness, which is lower than in those from Neandertals and modern humans. Furthermore, a very projected navicular tuberosity in SH differentiates it of Neandertals and modern humans. The weight-bearing tubercles on the navicular indicate a high body size in the hominins from Sima de los Huesos. This study confirms the evolutionary relationship between this Middle Pleistocene population and the Neandertals. Nevertheless, some traits differentiate the SH hominins and Neandertal navicular bones. These results are also in accordance with the proposed large corporal size for the population from Sima de los Huesos and the primitive biotype of this hominins from the Middle Pleistocene [5].

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