Musculoskeletal stress markers and body mass index.

GINA AGOSTINI. Department of Anthropology, University of Massachusetts, Amherst.

Musculoskeletal stress markers (MSM) are commonly used to assess activity patterns in past populations, typically related to habitual action. While MSM analysis is common in bioarchaeology, testing of this method using modern known populations or recorded occupational data is limited.
In addition to activity, MSMs also correlate to sex, age and body size. The goal of this project was to assess the relationship between MSMs and an additional characteristic: weight. A sample of 184 white males of known age, stature and weight was divided into three BMI classes: underweight, normal weight and overweight. Thirteen MSMs were evaluated on both humeri and the left femur and tibia, and were scored according to standardization techniques presented by Mariotti et al. (2007).
Results of an ANOVA showed a significant effect of age on the left and right deltoid tuberosities and the gluteal line. An effect of BMI was reported at only one location: the left medial bicipital groove. However, subsequent t-tests found no difference in MSM expression between BMI classes.
These null findings are surprising, given that obesity has been significantly linked to biomechanical modifications in walking and sit-to-stand strategies, as well as increased muscle strength. They also contrast with results of a cross-sectional analysis conducted on the same sample which revealed a significant relationship between BMI and increased mediolateral dimensions of the proximal femur and both humeri. Because long bone cross-section is another commonly-used technique in activity assessments, this deviation warrants further investigation.

A"bone"ment: the reconciliation between MNI and MLNI in determining the population count of the death assemblage of the Saint Stephen's collection from Jerusalem.

HIBA AHMED, KELLY DAVIN and SUSAN SHERIDAN. [1]Department of Anthropology, University of Notre Dame.

The purpose of this study is to obtain a more accurate count of the number of individuals for the death assemblage from St. Stephen's Monastery in Jerusalem using MLNI. This method is argued to be a more accurate way of estimating the total number as compared to methods such as MNI, NISP, LI, etc. In this study, the calcaneus, distal femur, and talus, were chosen to calculate MLNI because they were the most represented bones. After separating out the fragments, elements of all three bones were sided, seriated, and measured. The bones were visually pair matched according to similarities between key landmarks, features, and paleopathologies. The resulting number of pair matches for each bone was used to calculate MNI and MLNI.
The calculated MLNI for the Saint Stephen's Collection was 214 using the calcaneus, 544 using the distal femur, and 256 using the talus. The numbers generated from the calcaneus and talus were more accurate than the MLNI derived from the femur due to the limitations of the original burial site. Also noteworthy is the effect of limited pair matching on MLNI calculation. The limited number of pair matches found for all three elements caused the high MLNI estimates, which are larger than the NISP: the supposed upper limit. Nevertheless, the study found that the tarsal bones provide a more realistic MLNI estimate than long bones because of greater practicality for pair matching, due to both the calcaneus and talus' numerous identifiable features and greater degree of preservation.
This study was funded by the Undergraduate Research Opportunity Program (UROP) at the University of Notre Dame, grant numbers 3103 and 3125.

New excavations at the Late Miocene hominoid-bearing locality of Can Llobateres 1 (Vallès-Penedès Basin, Catalonia, Spain): Preliminary results.

DAVID M. ALBA[1], ISAAC CASANOVAS-VILAR[1], SALVADOR MOYÀ-SOLÀ[2], SERGIO ALMÉCIJA[1,3], JOSEP M. ROBLES[1,4] and JOSEP M. MARMI[1]. [1]Institut Català de Paleontologia, Universitat Autònoma de Barcelona, [2]ICREA at Institut Català de Paleontologia and Unitat d'Antropologia Biològica, Universitat Autònoma de Barcelona, [3]Department of Vertebrate Paleontology, American Museum of Natural History, [4]FOSSILIA Serveis Paleontològics i Geològics, S.L.

The Late Miocene (ca. 9.7 Ma) site of Can Llobateres (Vallès-Penedès Basin, Catalonia, Spain) yielded the most abundant and complete remains of the fossil great ape *Hispanopithecus laietanus*. Most of the hominoid remains came from the lower levels (CLL1, early Vallesian, MN9), although a partial skeleton was recovered from the upper level (CLL2, late Vallesian, MN10) during the 1990s. In 2010, after almost 20 years of inactivity, paleontological excavations were resumed at CLL1, with the aim to enlarge the sample of hominoid remains, as well as to gather more geological, taphonomic and paleoecological data. In order to reach the fossiliferous levels, about 6 m of overlying and nearly sterile sediments had to be removed from a surface of about 100 m^2 with the aid of a digger. This allowed us to recover abundant and well-preserved plant remains from several layers situated slightly above the CLL1 classical levels; these macrovegetal remains will provide a wealth of relevant data for reconstructing the habitat inhabited by *Hispanopithecus*. Regarding the vertebrate levels, no systematic excavation was performed, although different levels from three different spots were excavated and screen-washed, in order to evaluate their richness regarding micro- and macrommamals. These samplings led to the recovery of more than a hundred large mammal remains (including a partial equid skeleton), as well as abundant small mammal remains, from several levels. Thus, although no hominoid remains were recovered, the preliminary results are very promising for the upcoming campaigns, when systematic excavations will be performed in this site.
This work has been supported by the National Geographic Society (8750-10), the Spanish Ministerio de Ciencia e Innovación (CGL2008-00325/BTE, and RYC-2009-04533 to DMA), the Generalitat de Catalunya (Grup de Paleoprimatologia i Paleontologia Humana, 2009 SGR 754), and the Fulbright Commission (2008 BFUL 00049 to SA).

The etiology of Porotic Hyperostosis and Spina Bifida Occulta in a high latitude hunter-gatherer.

MARTA P. ALFONSO-DURRUTY[1,2], FLAVIA MORELLO[3] and ELISA CALÁS[4]. [1]Department of Anthropology, University of Pennsylvania, [2]Department of Anthropology, State University of New York, Binghamton, [3]Universidad de Magallanes, Instituto de la Patagonia, Centro de Estudios del Hombre Austral, Punta Arenas, Chile, [4]Departamento de Antropología, Universidad de Chile.

Porotic hyperostosis (PH) and spina bifida occulta are among the most common stress-markers and congenital defects found in skeletal collections. Although PH is commonly regarded as the result of iron-deficiency anemias, only megaloblastic anemias (genetic or acquired) lead to the medular expansion that results in PH formation. Spina Bifida, on the other hand, has a complex etiology that includes genetic and environmental factors. In this case-study, we present evidence of both lesions in a high latitude hunter-gatherer from Cabo Nose, Tierra del Fuego, Chile (AD 1030 $\pm$ 80). The co-occurrence of these conditions, the type of diet, and the environment occupied by this individual suggests that a deficiency in vitamin B9 (folate) is the most likely explanation for the presence of both conditions. This case-study contributes to the on-going discussion regarding the etiology of Porotic Hyperostosis and spina bifida occulta. This study suggests that an analysis of co-occurrence among high-latitude populations may clarify the etiology of both conditions.