

SPAIN/ESPAÑA

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INTRODUCTION

A brief history and current state of physical anthropology in Spain

Physical anthropology as a scientific discipline in Spain can be considered as starting in the 1860s under the influence of the French anthropologist Paul Broca (for further detailed information on its beginnings in Spain see Reverte-Coma 1991). 1865 sees the creation of the Spanish Anthropological Society (*Sociedad Española de Antropología*) with several notorious scholars such as Pedro González de Velasco and Ángel Pulido Fernández. In 1885 the Museum of Natural History in Madrid (*Museo de Historia Natural de Madrid*) was founded. In 1892, the museum's founder Manuel Antón y Ferrándiz, who had trained in Paris, took the first Chair of Anthropology in the Science Faculty of the Central University of Madrid (*Universidad Central de Madrid*). In 1894, Dr Federico Olóriz y Aguilera (see Arquiola 1981) carried out work on cephalic indices in Spain, publishing his famous work entitled *Distribución geográfica del índice cefálico en España*. In 1921, the Spanish Society of Anthropology, Ethnology and Prehistory was founded (*Sociedad Española de Antropología, Etnología y Prehistoria*). The end of the nineteenth century and first half of the twentieth century saw many notorious scholars including Hoyos Sáinz, Telesforo de Aranzadi, Francisco de las Barras de Aragón, José Pons and Santiago Alcobé. In México, a Spanish immigrant, Juan Comas, published his reference book *Manual de Antropología Física* (1959), followed by an English translation in 1960 (*Manual of Physical Anthropology*). In 1973 a number of Spanish physical anthropologists had

created a Biological Anthropology group (*Grupo de Antropología Biológica*) within the Spanish Society of Natural History. In the same year, in order to improve the activity in the field of physical anthropology, a meeting was organised at the University of Seville between the 30 January and the 3 February (*I Reunión de Antropólogos Españoles*). This meeting congregated Spanish social, cultural and biological anthropologists to discuss research and teaching. The success of this meeting led to a second meeting in Segovia in November of 1974 (*II Reunión de Antropólogos Españoles*) with an attendance of more than 200 scientists. While in the first meeting only one person, Alfredo Jiménez, provided the vision of Biological Anthropology in Spain (Jiménez 1975); the second meeting saw an increase in the number of biological anthropologists. This considerable number motivated the organization of the first Spanish Anthropology Congress (*I Congreso Español de Antropología*) in Barcelona in 1977. The first symposium of Biological Anthropology (*I Simposio de Antropología Biológica de España*) was hosted by the *Universidad Complutense de Madrid* between 28 and 31 March 1978 with both national and international participants; and the conference proceedings were published in 1979 (Garralda and Grande 1979). On 30 March 1978 the Spanish Society for Biological Anthropology (*Sociedad Española de Antropología Biológica* or SEAB) was founded under the presidency of José Pons; although it only received official recognition on the 4 December 1979. The first committee meeting in 1978, nevertheless, addressed the following issues: the creation of a publication (*Boletín de la Sociedad Española de Antropología Biológica*) with the first issue published in 1980; the hosting of a congress (*Congreso de Antropología Biológica de España*) every two years and the publication of the conference proceedings (*Actas y Comunicaciones*). In 1987, the Spanish Palaeopathological Society was founded (*Asociación Española de Paleopatología*) and is currently a very active and dynamic society (see Etxeberria 2009). Also of relevance is the foundation in 2006 of the Spanish Association of Forensic Anthropology and Odontology (*Asociación Española de Antropología y Odontología Forenses* or AEAOF).¹

On 16 November 2006, the society's name changed from SEAB to SEAF (*Sociedad Española de Antropología Física*) and its journal becoming the *Revista Española de Antropología Física* or REAF (Figure 1). The conferences are every two years and the last one took place in Alcalá de Henares in 2009 with a number of international and national participants (Figure 2). Information on publication trends of the Society and its journal, which is a reflection of biological anthropology in Spain, can be found in the work of Vizcaíno *et al.* (2009) which reviews 1185 works published in conference proceedings from 1978 to 2005.

When biological anthropology is considered overall, then the discipline in Spain sees considerable research in human growth and nutrition, palaeoanthropology, dermatoglyphs and population genetics among other aspects. Palaeopathological research is extensive as well as osteological research in relation to developing techniques for age and sex determination. Although more traditional studies such as craniometric analysis are still carried out today, many scholars are increasingly working on ancient DNA studies (e.g. Sampietro *et al.* 2005; Lalueza-Fox *et al.* 2005, 2009), trace element analysis (e.g. Safont *et al.* 1998; Subirà and Malgosa 2005) and stable isotope analysis (e.g. García *et al.* 2006, 2009; Márquez-Grant *et al.* 2003, in press) and within an increasing international network and a multidisciplinary approach.

Skeletal collections in Spain

The oldest documented collections in Spain are the 1885 pathological collection of the University of Granada and the Olóriz Collection (*Colección Olóriz*) of the Anatomical Museum of the *Universidad Complutense de Madrid*. The pathological collection from the University of Granada was started by Dr Duarte from pathological cases at the *Hospital Clínico* of Granada University. The collection includes a considerable number of skeletal elements with a number of documented pathological conditions including cranial malformation, syphilis, leprosy, tuberculosis, neoplasms and trauma. These human remains belonged to persons who were being treated but later died in the hospital. The majority of them are accompanied by plaster casts

which show the external symptoms that the disease had left on the body. The Olóriz collection was created by anatomist Dr Olóriz. It originally comprised 2250 documented skulls from different regions of Spain, although this number has been reduced today (database at <http://www.ucm.es/info/museoana/Colecciones/Craneos/index.htm>).

Since the 1980s, four more collections came into being. In 1985 Dr Francisco Pastor started the Valladolid collection at the Anatomical Museum of the University of Valladolid. This is comprised by more than 100 documented individuals. In Granada, Dr Miguel Botella and Dr Immaculada Alemán began a collection of 489 complete skeletons in a good state of preservation and with information on age, sex and cause of death. Of these, 283 are immature skeletons of individuals younger than 10 years of age. The University of Granada also counts with a forensic collection of documented samples with traumatic peri-mortem injuries. Dr José Antonio Sánchez Sánchez created a documented collection, which is at the *Universidad Complutense de Madrid*; while in Barcelona Dr Carme Rissech and Dr Assumpció Malgosa created the UAB (*Universitat Autònoma de Barcelona*) collection with known age and sex information among other details (Rissech and Steadman 2010).

There are many historical collections held in museums and institutions. These include the University of Leon's collection of over 2,000 skeletons from 40 populations from the region of *Castilla y León* (Caro *et al.* 2008). Worthy of mention, too, are the human remains curated at the *Museo Reverte Coma* (or *Museo de Antropología Forense, Paleopatología y Criminología*) in Madrid, with a variety of crania from mediaeval times, a pathological collection and an interest in forensic anthropology among other sections (Reverte-Coma 1991; www.museorevertecoma.org).

Education and training

In 2000, Physical Anthropology in Spain was officially recognized as a subject (*Área de Conocimiento*) within the Spanish university system and is now compulsory within the Bachelor of Science degree (formerly known as *Licenciatura* and soon to be known as *Grados*) in Biology. Today, it is taught as a subject in biology or medicine at the universities of Barcelona (Central, Autónoma and Pompeu Fabra), Granada, León, Madrid (Complutense, Autónoma and Alcalá), Murcia, Oviedo, País Vasco, Salamanca, Santiago de Compostela, Valencia, Vigo and Zaragoza. Thus, physical anthropologists in Spain tend to derive from a biological and medical background. More recently, thanks to the creation of Master courses, many students attending are those with an archaeological background.

The subject has also been included in the fields of anatomy and comparative pathology, social anthropology, archaeology, ecology, physical education and sport studies, genetics, forensic medicine, palaeontology and zoology.

Finally, although the subject of forensic anthropology is mainly within Forensic Medicine, the Ministry of Education in Spain follows the UNESCO classification of the subject within physical anthropology in science (Biology, Life Sciences) rather than medicine or forensic medicine (Etxeberria 2001). The majority of forensic anthropologists in Spain are actually practicing forensic pathologists (*médico forense*) who have specialized in forensic anthropology. Other forensic anthropologists may have a biological or anthropological background but mainly undertake research at universities rather than being involved in case work. Usually, forensic anthropologists with a medical background and undertaking modern casework tend to be attached to a governmental institution (e.g. *Escuela de Medicina Legal* or *Instituto Anatómico Forense*, both in Madrid). Additionally, both the National Police (*Policía Nacional*) and the Civil Guard (*Guardia Civil*) and other regional forces (e.g. *Ertzaintza* in the

Basque Country) have their own team of forensic anthropologists that tend to have a medical background and have also qualified as a police officer.

ARCHAEOLOGICAL HUMAN REMAINS AND LEGISLATION

Archaeological legislation

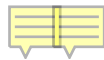
Spain is divided in 17 'autonomous regions' (*Comunidades Autónomas*) and, in addition, there are two Spanish autonomous cities, Ceuta and Melilla, which are located in North Africa.

Archaeological work in Spain falls under the 1985 *Ley del Patrimonio Histórico Español* (Law of Spanish Historical Heritage). The law refers to any movable or unmovable artifacts, relics or structures (*bienes muebles e inmuebles*) that are of artistic, historical, palaeontological, archaeological, ethnographic, scientific or technical interest. It refers to documentary sources, archaeological sites, natural sites, gardens and parks of an artistic, historical or anthropological value; whether buried, on the surface or underwater. All sites or monuments that can be preserved will be listed as protected (e.g. *Bien de Interés Cultural* or BIC).

This 1985 law provides general specifications established by the Spanish Government. However, the excavation licence (*permiso de excavación*), and more specific legislation regarding archaeological work, curation, archiving, post-excavation work, etc. has been transferred to the different regional governments that control the archaeological work and provide authorization for excavation and survey. Although all regions run directly under the general *Ley del Patrimonio Histórico Español*, they will also have their own regional (*Comunidades Autónomas*) laws. The authorization from a regional or local governmental institution (e.g. *Consejería, Consell, Conselleria* or *Saila* depending on the regional language) is required for any archaeological activity to take place in that region, whether it is an excavation,

an evaluation, a watching brief, an underwater exploration or the study of cave paintings. In the case of research projects, the interested party will have to provide a research proposal, identify the area to be excavated, provide a timeline for the project, information on team members and will need consent from the landowner. With regard to rescue excavations or watching briefs, it is the regional government who will request that the construction company employs an archaeologist.

This regional or local authority obliges all archaeologists to submit the artefacts, human remains or any other environmental samples to the museums once they have been clearly catalogued, washed and labeled. These artifacts (no washing or labeling required for human remains) need to be inventoried and analysed, after which a final report is sent to the regional governmental institution (the council). The deadline to submit all the records, inventory and report is usually two years from the end of the excavation. The site director cannot usually direct another site if the report from his or her previous site has not been submitted.



It is the regional government that has the power to authorize or to cease archaeological work. In order to apply for an excavation permit, including the excavation of archaeological sites including human remains, the project director will have to present a proposal to the heritage or cultural authorities of the regional government where the excavation is to take place, since it is this regional institution which has the power to authorize or to cease archaeological work. In Catalonia for example, the legislative framework for archaeology can be found in the official bulletin (DOG) for this region, which addresses the legislation regarding research excavations of archaeological or palaeontological interest. In the case of a research project, the proposal to apply for an excavation license (*permiso de excavación*) requires information on the research project, the CVs of the director and the team, a likely timetable for the work, the support of a recognized institution and details on artefact conservation. The director should demonstrate experience and have a relevant degree, usually a degree in History (*Licenciatura en Historia*).

Approval from the landlord is also required. The license is only applicable for one intervention so that a separate license is required for each campaign if applicable. The director of the excavation will be responsible for writing the report and cataloguing the materials within one year. Any permits required by foreign researchers or institutions must have the support of a known institution in their country. The project should also have at least one Spanish co-director.

To summarize, although the national law provides a legal framework, each region (*Comunidad Autónoma*) will develop its own legislation within the limits of the Spanish law, and will have total control of archaeological work and the protection of sites and monuments in that particular region. An exception to this, are the lands or sites that are National Heritage (*Patrimonio Nacional*) or that belong to the Ministry of Defence (*Ministerio de Defensa*). Due to this regional autonomy, therefore, it is necessary for archaeologists to check the regional legislation in order to follow specific requirements (see Arrizabalaga 1997; Querol and Martínez 1996)

Human remains and legislation

When human remains are randomly discovered, the police should be contacted and they will inform the judge (*juez de instrucción*) or what is the equivalent to the coroner. This judge will decide what to do with the situation and who needs to attend the scene. Usually the first person to attend the scene will be the forensic pathologist (*médico forense*). If the remains are skeletonised and likely to be archaeological, the pathologist will inform the judge who will call for a governmental archaeologist (e.g. from the council) to attend the scene. However, if the judge has been called initially, therefore making it a judicial process, it is the pathologist that has to lift the remains, although supervised by the archaeologist. Sometimes, if the archaeologist is called first to the site and can confirm the remains as archaeological, it is still necessary on

occasions to wait the visit of the coroner or judge (*juez de instrucción*) or forensic pathologist (*médico forense*), after which a rescue excavation will be carried out.

The borderline between archaeological and non-archaeological remains is not clear. In Galicia, the Heritage Law (*Lei do Patrimonio Cultural de Galicia*) and the decree relating to archaeological activity (*Decreto 199/1997 de 10 de Julio*) establishes a period of 100 years to consider something as archaeological, and this is also applicable to most regions. In other regions or instances, the law may indicate that sites of archaeological interest and under special protection will have to be 50 years or older. The remains of the dead from the Civil War (1936-39) falls between archaeological and forensic. Moreover, the Criminal Code in Spain (*Código Penal Español*, Articles 131, 132 and 133; and *Ley Orgánica 10/1995 de 23 de noviembre*) establishes as a general period for homicide a time within the last 20 years. However, the time frame starts to count from the time the police start searching for the suspect. In reality, it depends on the context in which the remains have been found. Human remains with no signs of violence or evidence of foul play appearing in a non-crime related context (*contexto no judicial*) and of a date, for example, estimated in 30 years, will be of no criminal or archaeological interest. In this case of bones older than 30 years, it is the judge who decides whether to close the case.

There is no specific legislation for the excavation of archaeological human remains and therefore they fall under the general heritage and excavation regulations.² There are also no specific differences between the palaeontological finds (e.g. the important archaic *Homo* finds from Atapuerca) and human remains from more recent archaeological contexts. Nevertheless, there are sometimes specific mention of bones and human remains within this general legislation. In Andalucía, more specific emphasis has been placed on human remains and a number of anthropologists are currently attempting to ensure that more specific requirements are stated. In the region of Cantabria, there is mention of bones (*'los útiles, huesos, cerámicas, metales'*, emphasis ours) indicating they must be deposited in the regional museum within six months since the end of the fieldwork.

At present, there is no legal obligation for an anthropologist to be on site but this is certainly very strongly recommended by most institutions and national anthropological and palaeopathological associations. An exception may be the *Dirección Xeral de Patrimonio de la Xunta de Galicia* or the Galician Cultural Department, which may oblige the archaeological team to include a physical anthropologist in an excavation. Since 2007 the government of the region of Galicia (*Xunta de Galicia*) in the northwest of Spain, and the physical anthropology unit of the University of Santiago de Compostela, have a contract which enables the participation of the university anthropologist(s) in excavations undertaken by archaeological companies. This allows for recording and methodological standardization across the region and government funding to undertake post-excavation analysis of the human remains (e.g. see López-Costas 2008).

Regarding human remains from churches and churchyards, there is still a debate surrounding the excavation of human remains from Catholic grounds. In Christian cemeteries and burials within Catholic churches, permission needs to be sought from the Catholic Church (*Iglesia Católica*). Usually, the regional government will approve the excavation by liaising and informing the Church. In these cases, for example when the work involves excavating burials in a church nave, a mixed committee with regional government and Church representatives will approve, coordinate and inspect the work to be undertaken.

With regard to exhumations in cemeteries, the law (BOE) with its own regional bulletins (e.g. BOJA for Andalucía), has a section (chapter V) relevant to the use of corpses and human remains for teaching and research purposes. These remains can derive from individuals who had voluntarily offered to donate their body, or human remains not claimed by relatives or, on the contrary, for which its donation has been approved by a relative; and always ensuring that the victim is not part of a criminal investigation. In these case, transportation of the bodies (e.g.

from the cemetery to a Medical Faculty) should ideally be done with a hearse. The skeletal collection from the Autonomous University of Barcelona (UAB) mentioned previously and created in 1996-97, was the result between the Biological Anthropology Unit of the Autonomous University of Barcelona and the Granollers City Hall (Granollers, Barcelona) with the aim of having a reference collection in Catalonia (Rissech and Steadman 2010). Granollers City Hall granted permission to collect the remains of individuals that had not been claimed by their families and that were destined to a communal ossuary in the cemetery. In Spanish cemeteries, the dead are usually buried in niches (cavities constructed in walls within the cemetery) and the possession of a niche lasts for 50 years, after which they can be rented for renewable periods of five years. Non payment of rent results in the loss of rights and the existing remains are exhumed by the town hall and taken to a common ossuary.

Finally, authorization for transportation of archaeological human remains will be sought from the local cultural or heritage authorities (e.g. regional government) and the director of the excavation. The authorization may be in the form of a letter stating that the number of human remains, the place they are going to and the type of analysis to be undertaken. If the materials have been deposited in a museum, it is the museum director that might be able to provide the authorization. Sometimes there is a requirement that remains to be transported must be insured (e.g. for any loss or damage).

Civil War graves

The Spanish Civil War (1936-39) and the dictatorship that followed (1939-75) resulted in thousands of mass graves. Since December 2007, there is legislation (*Ley de Memoria Histórica*)³ regulating exhumations in order to recover and identify the deceased. The legislation indicates that collaboration must be present between the governmental institutions, the landowners and the relatives or legal representatives of the deceased. Generally speaking,

this includes the requirement to have authorization from relatives or the legal representatives of the deceased, the authorization of the governmental institutions in relation to excavation or survey taking into consideration the National Heritage Law, the authorization from the Health administration (Mortuary Police or *Policía Sanitaria Mortuaria*), and the authorization from the landlord that will allow excavation of the grave.

This legislation, however, also depends on the different regions in Spain since each region may have its own specific legislation.⁴ In this State bulletin there is also reference to the maps that are available with the location of some Civil War graves and it also provides information regarding the transportation of the remains according to the legislation established by the Mortuary Police (*Policía Sanitaria Mortuaria*).

One government draft written by Spanish forensic anthropologists under the coordination of Dr Francisco Etxeberria, provides some recommendations (Etxeberria, unpublished)⁵. It is a draft in which other specialists in Spain have collaborated and provides some guidelines regarding how to proceed in order to investigate mass graves from the Civil War. For example, it states that if there are conflicting interests between the different relatives or legal representatives of the deceased, it will be the local authority that will decide either a complete, partial or non-opening of the grave. In addition, the proposal recommends that the following steps be undertaken: 1) the creation of an *ante-mortem* database for the victims and prior archival research; 2) archaeological investigation: location and nature of the grave, planning of resources, costs and time required; 3) authorization: written consent from the relatives of the victims and authorization from the local authorities; 4) archaeological excavation: ensuring a fieldwork diary is kept and all necessary recording is undertaken, that the site has security measures, and the need to inform the judge, the police and the local authorities when remains have been found; 5) forensic examination: identification of the victims, cause and manner of death where possible. When identification has been possible, the remains will be sent to the

relatives and then reburied in a cemetery. Moreover, this proposal recommends the collaboration between different specialists (forensic pathologists, archaeologists, anthropologists, historians, etc.) as well as a close liaison with the families and the Civil War associations (e.g. *Asociación para la Recuperación de la Memoria Histórica*, www.memoriahistorica.org; and *El foro por la Memoria*, www.foroporlamemoria.info).

Ethical considerations

There has been a number of cases where there is a significant concern regarding the display and excavation of human remains. Although these cases are few, they nevertheless suggest that legislation is necessary in order to address these concerns.

Repatriation cases are rare in Spain and the first case of repatriation involved a nineteenth century African body displayed in a local museum (Museu Darder, Banyoles), and which was repatriated in the 1990s (Jaume *et al.* 1992). With regard to excavations, problems arose during the excavation in 1996 of sixteenth century Jewish graves in Valencia (Jiménez and Mata 2001; Endere 2000). In this case, the town hall and the regional government had initially decided to return the remains to the Israeli Community in Spain so they could be reburied in a Jewish cemetery in Barcelona prior to any anthropological study. The archaeologists who directed the excavation made a complaint to the Citizen's Bureau (*Defensor del Pueblo*) and in 1998 the authorities decided to overrule their initial decision and they considered the cemetery as part of the archaeological heritage and therefore protected under heritage law (*Ley del Patrimonio Histórico Español*). Similar problems were present in 2007 during the excavation of the Mediaeval Jewish cemetery of *Les Roquetes* in *Tàrrega* (Barcelona) and the regional government's decision was to have the remains returned to the Jewish community in Spain after a brief and rapid anthropological study. It was recognised at the time that there was a need for

protocols in case similar future situations arose (for further information see Jiménez and Mata 2001).

Mediaeval Islamic graves have been excavated and continue to be excavated but one must be sensitive and consider the community in which the remains have been found. A large Islamic cemetery in Ávila, in the centre of Spain, with thousands of tombs dated to the thirteenth and fourteenth centuries AD, was excavated and in this case the archaeologists went to the authorities to actually have the area protected under heritage law but their attempt was unsuccessful and construction works continued (see Gallego 2003).



Regarding the exhumations of Civil War graves, the relatives of those that disappeared must be considered as well as their desire or not to exhume and identify their deceased relatives.

It is also worthy of mention that a number of museum exhibitions including human remains have received positive feedback from the community. Examples of two recent exhibitions are *Apocalíptica. Els rastres de la mort a través de la història, segles XVI-XVIII* (Generalitat de Catalunya 2008), and *Esquelets Malalts. Una visió de la malaltia a través del temps* at the *Museu Egipci de Barcelona* (www.museuegipci.com) in 2009, with over 150 palaeopathological specimens. In 2010 in Valencia another exhibition has taken place entitled *Restes de Vida, Restes de Mort* at the *Museu de Prehistòria de Valencia* (www.museuprehistoriavalencia.es).

METHODS OF ANTHROPOLOGICAL ANALYSIS

International guidelines are followed in Spain and these include Acsádi and Nemeskéri (1970), Ferembach *et al.* (1980), Brothwell (1987), Buikstra and Ubelaker (1994), Bass (1995) and Brickley and McKinley (2004). However, anthropological methods developed from Spanish

populations and neighbouring Portuguese and French populations are also employed and should be used in any anthropological analysis.

The completeness of a skeleton is commonly measured with the 'preservation index' (*Índice de preservación*), which is a formula modified by Safont (Safont *et al.* 1999) based on the work of Walker *et al.* (1988). Age estimation in subadult individuals follows internationally recognized charts for dental development (e.g. Ubelaker 1999; Crétot 1978; Schour and Massler 1941). For skeletal development, the methods devised by Castellana and Kósa (1999) and Kósa and Castellana (2005) are also employed. Those methods developed also for subadult age estimation by Rissech and colleagues (Rissech *et al.* 2001, 2003, 2008; Rissech and Malgosa 2005, 2008; Rissech and Black 2007; Ríos *et al.* 2008) and other Spanish scholars (e.g. González-Martín 1999) are also applicable since they have been created from Spanish or Iberian populations.

Age estimation methods for adult skeletons, such as those on the pubic symphysis and auricular surface have been tested on Spanish osteological collections (Corcione 2008; Powoanda 2008).

These tests have revealed that the methods devised by Lovejoy (1985), Buckberry and Chamberlain (2002), Todd (1921) and Brooks-Suchey (1990) provide very little accuracy. The method devised by Brothwell (1987) on dental wear is the most widely used method when dental wear is considered; while the method devised by Miles (1963) is much less known and thus has been used less often. More recently, new methods for age estimation on the first rib (Garamendi *et al.* 2007) and the acetabulum (Rissech *et al.* 2006, 2007) have had some success.

Finally, when considering age categories, there is variation and, although debatable and perhaps controversial, many of the published works include the following age categories: perinates (36-40 weeks gestation), neonates (up to 12 months), Infant I (1-6 years), Infant II (7-12 years), Juvenile (13-20 years); while the adult categories are divided into 20-40 years, 40-60 and >60 years.

Spanish methods for sex determination include post-cranial discriminant functions (López-Bueis *et al.* 1995; Alemán *et al.* 1997; Trancho *et al.* 1997, 2000; Rissech and Malgosa 1997; Safont, 2000). Bruzek's (2002) method on pelvic morphology on French and Portuguese samples has also been employed in Spain.



Metric data is usually obtained following Martin and Saller (1957) but some national laboratories have also compiled their set of measurements to take (e.g. Robledo *et al.* 2008). When stature is estimated, Lalueza (1998) has indicated that the formulae by Trotter and Gleser (1952, 1958) for 'American Whites' are the least reliable, and that Pearson's (1898) method, widely used in Spain, appears to be the most reliable. Other methods employed are French (e.g. Manouvrier 1893; Olivier 1960) and Portuguese (Mendonça 2000). Trotter and Gleser's (1952, 1958) formulae for 'American Blacks' may be applicable in Mediterranean populations due to similar limb proportions.

General reference books that are popular include those by Reverte Coma on medical anthropology (1981) and forensic anthropology (1991, 1999). Other anthropological publications may also provide some useful information (e.g. see Isidro and Malgosa 2003; Campillo and Subirà 2004; Villalaín and Puchalt 2000). A book on taphonomy has also been published by Spanish scholars (Botella *et al.* 2000). General work of reference in palaeopathology includes the publications by D. Campillo which has set some national recommendations and may aid recording and reporting (with correct Spanish terminology) of palaeopathological cases (e.g. Campillo 1983, 2001, 2007). The work of Aufderheide and Rodríguez-Martín (1998) has many references to pathological cases from Spain, and similarly the *Atlas Handbook of Paleopathology* (Baxarias and Herrerín 2008). Recommendations for oral palaeopathology have been given by Chimenos and colleagues (1999). In 2007, the congress of the Spanish Palaeopathology Association included a workshop aimed at creating a working

group for recommendations on report writing in biological anthropology and palaeopathology (González Martín *et al.* 2009).

The analysis of human cremated bone

In Spain, the study of cremated bone stems mainly from the work of J.M. Reverte Coma (e.g. 1981, 1991). His influential work, alongside protocols devised by F. Gómez Bellard (1996), should be taken into account. National bibliography and the standard method to record and present cremated bone data which is usually very standardised in Spain has been summarised by Polo Cerdá and García Prósper (2007) and is accessible at www.uv.es/paleolab. There is still a need, however, to standardize the terminology for cremation burials and cremation-related contexts.

Comparative material



There are a number of bibliographical reviews which are useful if undertaking work in Spain and provide work to be used as comparative data and a number of classic sites (e.g. La Torrecilla). These are the journal of the Spanish Society of Physical anthropology (*REAF*) and the society's conference proceedings. Dr F. Etxeberria has compiled a considerable amount of Spanish publications (Etxeberria 2007; see also Trancho *et al.* 1995, 1997).

CONCLUSION

Physical anthropology in Spain has had an active tradition since the nineteenth century. While most researchers have a biological or medical background, the creation of Master's courses has led to training of scientists from other fields.

When archaeological excavations are to be conducted, legislation falls under the national heritage law but also under regional law. It is the regional government that will have specific requirements and will authorize the excavation. There are a number of methods developed from Spanish populations and have demonstrated a good level of accuracy. Some of these have been published in Spanish, but the most recent ones can be easily found in international journals. There is a need for guidelines and standardization in Spain. It would be useful to see national recommendations especially relating to recording and presentation of osteological results.

Biomolecular studies have seen an increase recently, as well as the creation of some databases and new societies. In addition, palaeoanthropological sites such as those at Atapuerca or El Sidrón have attracted a number of international scholars. It would only be fair to say that physical anthropology in Spain is thriving with new generations of scholars re-shaping the field within a wider international network.

USEFUL CONTACTS

The Spanish Society of Physical Anthropology or SEAF (*Sociedad Española de Antropología Física*) is a good point of contact (<http://www3.unileon.es/seaf>). Other societies of relevance are the Spanish Palaeopathology Association (*Asociación Española de Paleopatología*; <http://www.ucm.es/info/aep/>), Dr. Francisco Etxeberría's website from *Sociedades de Ciencias Aranzadi* (<http://www.aranzadi-zientziak.org/index.php?id=97>), the website of *Grupo Paleolab* (<http://www.uv.es/paleolab>) and the forensic anthropology and odontology association website (*Asociación Española de Antropología y Odontología Forense*; <http://www.freewebtown.com/aeaof/>). Every university department has its website too and information can be found under the Faculty of Sciences and departments of biology. Other smaller associations include the Catalano-Balearic Palaeopathological Association (*Associació*

Catalano-Balear de Paleopatologia; paleopatologia@gmail.com). All the information on legislation can be found on the government's official website www.boe.es.

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¹For information on the development of forensic anthropology in Spain please refer to the work of Reverte (1991) and Prieto (2008).

² In the region of Andalucía, a draft was submitted in November 2009 to the Cultural governmental body (*Consejería de Cultura*) to amend the archaeological legislation to favor the recovery, study and treatment of human remains and the role of the osteoarchaeologist (I. López, pers. comm). Discussions are still ongoing.

³ http://leymemoria.mjusticia.es/paginas/es/ley_memoria.html (bulletin –BOE- of 27 December 2007)

⁴ For example, a protocol for exhumation in the region of Andalucía has already been published in the governmental bulletin for the region (BOJA, no. 190: 8-12, dated 7 September 2009). In Catalonia, for example, it is not necessary to get authorization from the relatives of the deceased and a grave can be opened as long as the judge, the Civil Guard (*Guardia Civil*) and the local administration have been informed, and usually it is the governmental institution, the *Generalitat*, that undertakes the work. In the region of Aragon, mass graves are classified in different categories depending on the deceased (e.g. whether soldiers killed in action, civilians killed in combat or during explosions, etc.).

⁵ http://www.foroporlamemoria.info/excavaciones/panorama_organizativo_antropo_patolo.htm.