

BETWEEN WAR AND EPIDEMICS... ROBUSTNESS IN A MALE SKELETAL SAMPLE FROM S. FRANCISCO'S CONVENT, COIMBRA

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Introduction

Between 2010 and 2013, an archaeological excavation in S. Francisco's convent, Coimbra (Portugal), allowed for recovering 601 skeletons (from both sexes and different age groups) from two phases of burials dated from the 19th century, a period characterized by war (Peninsular Wars and Portuguese Civil War) and epidemics (being cholera the most important)^{1,2}.

With the aim of understanding if individuals recovered from the second phase of burials, characterized by mass graves within trenches were related to a context of war or epidemic, the limbs' robustness, the way bodies were deposited, and the age-at-death of 60 males were analysed.

Results

The robustness indices are always higher in the SFC, in any index and age group.

Significant differences ($p \leq 0,05$) were found between the two collections in the humerus of elderly adults, in the radius in all age groups and in the tibia of young and elderly adults.

Table 1. Descriptive statistics of the robustness indices, according to each age-group (SFC and CEI).

		SFC			CEI		
		n	\bar{x}	s.d	n	\bar{x}	s.d.
Humerus	Young adults	12	19.83	1.24	19	19.28	1.24
	Mature adults	31	20.49	1.35	57	19.93	1.36
	Elderly adults	3	23.19	1.44	24	19.72	1.19
Radius	Young adults	12	18.76	1.30	19	17.22	1.46
	Mature adults	37	18.83	1.64	57	17.46	1.29
	Elderly adults	3	20.49	0.81	24	17.39	1.39
Femur	Young adults	14	19.29	1.30	19	19.08	1.08
	Mature adults	32	20.34	0.94	57	19.93	1.06
	Elderly adults	4	21.20	2.12	24	20.03	1.16
Tibia	Young adults	12	20.66	1.08	19	19.89	0.98
	Mature adults	25	21.11	1.26	57	20.46	1.49
	Elderly adults	2	22.71	0.90	24	20.66	1.39

Table 2. Results of t tests for independent samples (SFC and CEI) of the humerus, radius, femur and tibia robustness indices, according to age-group.

	Humerus			Radius			Femur			Tibia		
	t	df	p	t	df	p	t	df	p	t	df	p
Young adults	1.20	29	0.24	2.98	29	0.01	0.49	31	0.63	2.03	29	0.05
Mature adults	1.84	86	0.07	4.50	92	0.00	1.85	87	0.07	1.88	80	0.06
Elderly adults	4.68	25	0.00	3.74	25	0.00	1.66	26	0.11	2.00	24	0.05

Material and methods

S. Francisco's collection (SFC) is stored in *Dryas Arqueologia, Lda*. The second phase of burial is composed by 287 skeletons (47.7%) and the age-at-death estimation suggests 196 males (73.4%)². For this study, 60 male skeletons were selected and divided into three age-groups: young adults (18-30 years); mature adults (31-60 years) and elderly adults (>60 years)^{3,4,5}.

The robustness indices⁶, calculated from the humerus, radius, femur, and tibia were compared through Student T-tests with those reported for a Portuguese identified osteological collection from the 19th-20th centuries (CEI)⁸.

Discussion and final considerations

Several robustness values were significantly higher in S. Francisco's sample (humerus in elderly adults, radio in all age groups, and tibia in young and elderly adults) in comparison to identified Portuguese individuals from the late 19th to early 20th centuries, despite the similarities in limb proportions and stature between the two samples⁷. Although it can be postulated that the greater robustness is due to harsh physical efforts, the question is what these consisted of. Were these individuals robust because they were military? Or is their robustness attributable to other occupational reasons?

It is important to highlight that soldiers may have been buried at this site during the wars occurring at that time. However, the fact that the individuals were buried without great care demonstrates an intense occupation of the site in a short period of time, being suggestive of great hurry, characteristic of great epidemics. Although this does not completely exclude the possibility of the individuals belonging to military corps, the existence of elder individuals in the sample does not favour the military hypothesis. It is more probable that the high values of robustness may be explained by harsh work, which was very common at that time.

In the future, this study should be extended to a larger sample and a thorough palaeopathological study of these individuals should be performed to help elucidating this question.

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