



Physical Anthropology Section – 2005

H38 Stature Estimation of Hispanics: The Most Appropriate Stature Regression Equations

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After attending this presentation, attendees will be aware of the most appropriate stature regression equations for the prediction of stature for individuals of Hispanic biological affinity. This presentation will illustrate various methods, and their results, which can be utilized to estimate the stature of Hispanic individuals. Discussion of the most appropriate stature regression equations for stature estimates of individuals of Hispanic biological affinity will provide invaluable knowledge to forensic anthropologists and pathologists who wish to provide more accurate stature estimation.

This presentation will impact the forensic community and/or humanity by demonstrating, discussing, and illustrating the various stature regression equations available for individuals of Hispanic biological affinity and identify the most appropriate equations.

Background: The debate as to the “biological reality” of “race” is still ongoing and heavily contested even within the field of forensic anthropology. Yet, even among the more generally accepted racial groups of Caucasian (White), African American (Black), Native American Indian, Asian, etc., there is debate as to whether “Hispanics” (Mexicans, Puerto Ricans, Cubans, etc.) should be considered a “biological race” or a “social race.” As noted by Ross *et al.* (2004:1), “the term ‘Hispanic’ includes all persons of Spanish speaking countries. However, in the forensic setting, the use of such an umbrella term is problematic because it ignores the distinct ethnohistories and migration patterns of each geographical region. The use of ‘Hispanic’ as a classification or category does not provide an adequate biological profile.” Despite the ambiguities in the classification and/or identification of Hispanic individuals, forensic anthropologists are still required to develop a comprehensive biological profile of an individual who may be of an Hispanic biological affinity. Outside of the racial assessment itself, stature estimation is potentially among the most problematic aspects of the biological profile.

Depending on the geographic region, an Hispanic individual may be a genetic and morphological mosaic of European (Spanish), Native Amerindian and/or African biological elements. Hispanics from Mexico and the Southwest United States have varying degrees of European and Amerindian biological affinity, while Hispanics from the Caribbean (Puerto Rico, Cuba, etc.) have varying degrees of European biological affinity, and may have a stronger African biological affinity with minimal Amerindian biological affinity. Traditionally, when it came to estimating the stature of an Hispanic individual, forensic anthropologists have relied on the stature regression equations developed by Genoves (1967), which were built on data from Central Mexican (Mesoamerican) males. As result of the reference data set Genoves utilized to build those stature regression equations, they may not be appropriate for Caribbean Hispanics. What may have been overlooked by some or many forensic anthropologist is a recommendation made by Trotter and Gleser (1958), which may resolve this problem. In their classic study of Caucasian (White) and African American (Black) male and female stature estimations, and Native American Indian (Mongoloid) male stature estimations, a small sample of Puerto Rican individuals were also included. Ultimately stature regression equations were not developed for the Puerto Rican sample, however, Trotter and Gleser recommended utilizing the Negro (Black) stature regression equations due to the similarities in limb proportions and relationships of long bone lengths to stature seen in both the Puerto Rican and Negro (Black) samples (Trotter, 1970:82; Trotter and Gleser, 1958: 113-114). This preliminary study will test the various stature regression equations for the estimation of stature of known “Caribbean” Hispanics.

Anthropological Examples: In order to evaluate the various stature regression equations available and traditionally utilized to estimate the stature of Hispanic individuals, and to identify the most appropriate stature regression methods, long bone measurements of two positively identified “Caribbean” Hispanic individuals were taken to calculate estimated statures via these various stature regression equations.

The first individual, Case No. WCME02-1574, was from the Dominican Republic; and the second individual, Case No. SCME03-3734, was from Puerto Rico. The table below displays the results obtained from the various stature regression equations. As is evident from the table, for the “Caribbean” Hispanic individuals the old Negro male stature regression equations from Trotter and Gleser (1958) provided the closest stature estimations to the actual recorded stature for those individuals.



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Case	Measurement	White*	Negro-New*	Negro-Old†	Mexican*	Genoves‡
“Caribbean” Hispanics						
WCME02-1574 – Reported Stature: 70,” ~177.8cm						
Femur	49.9	180.172	175.639	177.01	180.426	179.153
Difference		2.372	-2.161	-0.79	2.626	1.353
SCME03-3734 – Reported Stature: 66,” ~167.64cm						
Humerus	33.1	172.398	170.006	170.808	170.592	
Radius	24.4	171.242	165.008	166.438	167.33	
Ulna	26.7	172.84	166.332	168.21	169.612	
Femur	45.5	169.7	166.355	167.77	169.69	169.209
Tibia	37.5	173.12	168.145	167.485	169.12	167.252
Fibula	37.2	171.476	167.118	167.118	168.44	
Fem + Tib		171.19	166.49	167.2		
Average		171.71	167.06	167.86	169.13	168.23
Difference		4.07	-0.58	0.22	1.49	0.59

*Trotter, 1970

† Trotter and Gleser, 1958

‡ Genoves, 1967

Conclusions: The estimation of stature for “Hispanic” individuals is not a simple and straight forward process. The morphological assessment and biological affinity determination of Hispanic individuals is complicated and difficult on its own; now the geographic origin of a Hispanic individual needs to be considered in order to ensure the most accurate and thorough assessment of not only race but stature as well. Because of the differing genetic and morphological composition of “Caribbean” and “Mexican/Southwest” Hispanic individuals, the forensic anthropologist needs to consider the potential geographic origin of the individual when selecting the appropriate stature regression equation. These preliminary results indicate that the old Negro (Black) stature regression equations of Trotter and Gleser (1958) may be the most appropriate equations for estimating the statures of “Caribbean” Hispanic individuals. Additional data from “Caribbean” Hispanic individuals will be obtained to further test and confirm the results seen in this preliminary investigation. Additionally, data from “Mexican/Southwest” Hispanic individuals will be obtained to compare the results obtained through application of the Genoves, as well as the Trotter and Gleser stature regression equations.

Stature Estimation, Stature Regression Equations, Hispanics