

## II. OBSERVATIONS ON PHYSICAL STRENGTH OF SOME WESTERN INDIANS AND "OLD AMERICAN" WHITES

Robert F. Heizer and Carol Treanor

During the year 1972-73 while one of us (RFH) was a Fellow at the Center for Advanced Study in the Behavioral Sciences (Palo Alto), the other (CT) was serving on the Computer Program staff at the Center, we collaborated on collection and analysis of certain data on the physical strength of Native Americans (Indians) and Old Americans (Whites) and the results, with commentary, are presented in this paper. Anthropologists have for a long time attempted to combat casual assessments of racial inferiority or superiority by arguing that these are usually based upon very subjective evidence. We provide here a body of objective data by which it is possible to achieve one measure of comparison between Native Americans and white Americans.

Literate observers who left a record of California Indians in the late eighteenth and early nineteenth century were European and American explorers and travellers. The Franciscan missionaries who had so much to do with Indians from 1769 to 1834 provide us with almost nothing in the way of objective and useful data on the neophytes under their charge. Generally speaking, despite differences in country of origin and creed, late eighteenth and early nineteenth century observers shared in the "Protestant ethic" whose tenets were devotion to hard work and self-denial, and it was only natural that they would evaluate other people they encountered in terms of these moral precepts. When some early European visitor to California described the Indians he saw as "lazy" or "self-indulgent," he was really saying "We work hard and are serious about life, but the Indian has no aim in life but to work as little as possible and enjoy being shiftless." That is one way to judge people, but it is not the only way. Cultures are workable systems by the application of which people get along sufficiently well to carry on the day-by-day routine of getting enough to eat, manage to mitigate the hazards which threaten their physical survival (whether these be from wild animals, famines, aggressive neighbors, floods, energy crises, earthquakes, droughts, tidal waves, and so on), and reproduce themselves in sufficient quantity to guarantee the maintenance and continuation of the social group. In these respects it appears that the California Indians at the time of their discovery by Europeans were a successful segment of humanity. We can say this because when the California Indians were first seen they constituted, as a whole, a series of small nations living side by side with neighbors with whom they had arranged reasonable terms of coexistence. There may have been occasional altercations (at times reaching the intensity of what ethnographers have termed warfare) over unauthorized crossing of tribal boundaries for the purpose of collecting seeds or hunting deer (we would call this poaching), but by and large the California Indians were clearly a congeries of independent societies (nations) who realized that survival, and perhaps more importantly, being able to live in peace, was more desirable than living in constant fear of armed attack.

For some reason the California Indians do not seem to have impressed white observers very favorably. In many cases the only Indians seen were mission neophytes who had been forced to abandon their customary ways and conform to the strict and repressive regimen of mission life. Describing Indians in this situation would be

rather like a foreign visitor describing Americans through persons he encountered in a penitentiary. Other observers saw Indians who were the survivors of once larger groups who had been decimated and harassed, or were being harassed, by the gold miners who swarmed into California after 1848. The Indians were not in very good shape in those years, and the safest way to live was to do nothing to excite the suspicion of some rough miner who would "shoot first and ask questions afterward." By this we mean to say that by being retiring, obsequious, non-controversial and subservient, an Indian who was near whites in the 1850's and 1860's might avoid getting killed merely because he was an Indian. Deprived of their food-gathering means through seizure of the lands and streams used for hunting and fishing, and excluded from participation as equals in the new economy (farming, manufacturing, business, gold mining) they were simply squeezed out of everything which the dominant whites were able to do, or use. It is not surprising, therefore, that Indians from 1849 on seemed to cut a poor figure and were described in such unfavorable terms.

We give here a selected series drawn from a much larger collection of quotations on Indian character from the writings of observers of earlier times. Most of these are stated in terms that are distinctly unfavorable. A few are neutral, and still fewer actually say things which are positively favorable. One notes a preponderance of terms of derogation and opprobium--for example: bestial, brutish, brutal, careless, capricious, childish, contemptible, cowardly, cruel, debased, degraded, despicable, dirty, dull, fickle, filthy, inconstant, indolent, indifferent, inferior, improvident, lazy, loose, low, mean, miserable, negligent, pusillanimous, shiftless, squalid, stupid, thievish, treacherous.

After going through the following excerpts of characterizations of California Indians, the reader will sense the low regard of Indians held by many, perhaps most, whites in California a century and more ago. Along with the low opinion of Indian morals and diligence, there ran also the parallel belief of their inferiority in both mental and physical attributes. If Indians who lived in such a favored area did not develop a more outstanding culture, then they were mentally backward. If they did not effectively fight (with their bows and arrows) against the whites (with their pistols and repeating rifles), then they were cowardly and inept. Rather than view the conflict between self-assured and aggressive whites and peaceful poorly-armed Indians as an unequal competition, the whites considered that the Indians lost the struggle because they were backward and cowardly and weak. It is this matter of weakness, in the physical or corporeal sense, that we later consider.

We may suppose that the derogatory comments of eighteenth and nineteenth century observers reflect, in part at least, their preconceptions of primitives--hunting and gathering peoples in particular. But since these accounts were widely read, the characterizations as such helped to shape and reinforce the opinions which readers, who did not know California Indians, were to develop. Many of these attitudes persist today, though awareness is growing that it is bad taste to express them publicly. It may be painful for Native Americans today to read these words and we do not recite them here because we are unaware of or insensitive to the pain they may evoke. We quote them because they are still in the published literature that is read and cited today, and believe that it is useful to remind people that these were views held a century ago by the great grandfathers of some California citizens. And, precisely because such evaluations of Indian character were so widely shared a century or so ago, their residual effect may to some extent still be a part of the attitude or belief of some living persons today. Only by publicly exposing these incorrect and vicious

expressions which were aimed at advertising the assumed superiority of whites in earlier times can we hope to eradicate them insofar as they still exist in the thinking of some Californians today.

Quoted below, with the briefest indications of authorship, is a sample of opinions of early observers about the California Indians they saw. The selection of quotations includes examples from Franciscan missionaries, early European visitors, secular historians, run-of-the-mill California historians and writers of the Gold Rush period.

Font, one of the first Franciscan missionaries, in 1775 described the Indians as "distinguished from beasts only by possessing the bodily or human form, but not by their deeds." The round-the-world voyager Von Kotzebue in 1830 was of the opinion that "in stupid apathy they exceed every race of men I have ever known, not excepting the degraded races of Tierra del Fuego and Van Diemen's Land." The English sea captain Vancouver in 1789 described the California Indians as "certainly a race of the most miserable beings I ever saw possessing the faculty of human reason... very ill made, their faces ugly, presenting a dull, heavy and stupid countenance, devoid of sensibility or the least expression." Engelhardt, an official church historian wrote in his *Missions and Missionaries of California* (1930): "All accounts agree in representing the natives of California as among the most stupid, brutish, filthy, lazy and improvident of the aborigines of America." Tuthill, in one of the first general histories of California (1866), Hittell in 1897, and Bancroft in 1886 held a similar view of the Indians, and used such phrases as "stupid and brutish," "contemptible physically as intellectually," "lazy and improvident." The Gold Rush period observers (or at least some of these who were literate) sang the same tune, describing the Indians in such phrases as "possessed of mean, treacherous and cowardly traits of character," "the lowest grade of human beings," "low, shiftless, indolent and cowardly," "in their habits little better than the ourang-outang," and so on.

Bancroft (*History of California I:777*, 1886) wrote: "There are some who assert that the character of the Californian (Indian) has been maligned. It does not follow, they say, that he is indolent because he does not work when the fertility of his native land enables him to live without labor; or that he is cowardly because he is not incessantly at war; or stupid and brutal because the mildness of the climate renders clothes and dwellings superfluous. But is this sound reasoning? Surely a people assisted by nature should progress faster than another struggling with depressing difficulties."

A slightly more favorable note is sounded by Hittell when he says, "It must not be forgotten that there are descendants of these aboriginal inhabitants still left in the State of California, who hire themselves out as workmen. There may be an admixture of foreign blood in some of these cases; but from what can be observed of the remnants of the ancient people, there is every reason to believe that, if the proper means had been taken, they might have been civilized. It would not have taken much to make them into a better people than many of the common herd of Mexican convicts, vagabonds and vagrants who came into the country as soldiers or colonists and who prided themselves upon belonging, in contradistinction to the Indians, to the gente de razon." Pickering, a member of the United States Exploring Expedition under Wilkes referred to the California Indians as "fine, robust men, of low stature and badly formed." Fletcher who was the chaplain on Drake's ship spoke of the Coast Miwok Indians they visited with in the summer of 1579 as "commonly so strong of body that that which two or three of our men could hardly beare, one of them would take upon his backe, and without grudging carrie it easily away, up hill and downe hill an English

mile together." Pfeiffer (Second Journal, 1856, p. 365) said, "Many of them are diminutive in stature, but they do not lack muscular strength, and we saw some who were tall and well formed," and Bryant (What I Saw in California, 1848, p. 266) reported the Indians as "rather below the middle stature, but strong, well-knit fellows...good looking and well-limbed."

Stephen Powers (Tribes of California, 1877, p. 416) wrote "That they were equal to Europeans in bread-winning strength nobody claims, for they lived largely on vegetable food, and that of a quality inferior to bread and beans. But as athletes they were superior, and they were a healthy, long-lived race. In trials of skill they used to shoot arrows a quarter of a mile, or drive them a half inch into a green oak. I knew a herald on the Upper Sacramento to run about fifty miles between ten or eleven o'clock and sunrise in September; another in Long Valley near Clear Lake, ran about twelve miles in a little over an hour. The strength of their lungs is shown by the fact that they would formerly remain under water twice as long as an American in diving for mussels.<sup>1/</sup> All things taken together, I am well convinced that the California Indians were originally a fruitful and comparatively a healthy and long-lived race."

The abilities of Indian runners is further attested to by J. Bourke (Journ. Amer. Folklore, Vol. 2, 1889) who told about a Mohave runner, Panta-cha, who could run 100 miles between sunrise and sunset and after a brief rest make the return trip, the whole 200 miles being covered in 24 hours, the average speed being 8.4 mph. Bourke hired another Mohave runner who went 21 miles in 3.5 hours (average 6.0 mph) and noted that "this was regarded so commonplace a performance as to be worth but two dollars for the round trip."

Being aware of the almost invariably low opinion which white observers held of California Indians, and noting that they were often described as physically weak, we were interested in testing in some way the accuracy of such evaluations. Attributions such as "bestiality", "carelessness," "capriciousness" and the like are, of course, not subject to objective verification or denial, there being no measure one can apply to such imputed characteristics, especially when they have been offered by persons untrained in psychology a century or more ago. But for the supposed physical weakness of California Indians there do exist objective data which allow us to compare California Indians not only with certain other Native Americans, but also white Americans. If California Indians in the nineteenth century were a physically degenerated and weak population, then this should be apparent in measurements of their muscular strength.

The measurement of physical strength available to us is the hand-grip pressure, measured in kilograms, exerted on the Collins dynamometer. For California Indians, E. W. Gifford collected a large series of dynamometer<sup>2/</sup> readings and published these in his monumental study, Californian Anthropometry.<sup>2/</sup> Data for several Southwestern

<sup>1/</sup> Livingstone Stone in Report of the Commissioner, U. S. Commission on Fish and Fisheries, for 1878, Part VI (Washington, 1880) speaks admiringly of the ability of the Wintu Indians to remain under water in the McCloud River whose temperature was below 50 degrees Fahrenheit.

<sup>2/</sup> University of California Publications in American Archaeology and Ethnology, Vol. 22, No. 6, 1926.

American Indian tribes were collected and published by A. Hrdlicka.<sup>3/</sup> Hrdlicka used the same instrument (Collins dynamometer) which was employed for the measurements reported by Gifford. For white Americans, as well as some immigrant Americans of European origin, the same instrument was used to determine muscular strength (pressure) of right and left hands.

Gifford's data are a kind of grab sample since they consist of measurements which were made at different times among different tribal groups by anthropologists who happened to be carrying with them a Collins dynamometer and, at the urging of Alfred Kroeber, recorded data on physical measurements, including muscular strength (i. e. hand squeeze in kg) as the opportunity allowed.

Hrdlicka's data come from his own field observations---those of an incredibly devoted scientist and an indefatigable worker. Where he could, during the years he was studying the physical characteristics of surviving American Indian populations, he got people to squeeze the dynamometer, and recorded their performances.

The information we have on white Americans also comes from Hrdlicka who made a study of the physical characteristics of a large number of individuals who fitted his definition of "Old Americans"---persons whose ancestors on each side of the family were born in the United States for at least two generations.<sup>4/</sup> Hrdlicka was studying what might be called the "American race," a term which does not mean much as such, but which could have particular meaning if one were interested in trying to define the phenotypic characteristics of the American population.<sup>5/</sup>

When we examined the data on California Indians, other American Indians, and Old Americans, we immediately encountered problems of comparability. All the measurements were equivalent because they were given in kilogram readings on the same instrument, the Collins dynamometer. For California Indians we had quite specific data in terms of age, sex and tribe, but there were too few subjects to analyze the data on the basis of tribal affiliation. We solved this by combining the data into two lumped units of northern and central California tribes.

<sup>3/</sup> Physiological and Medical Observations Among the Indians of Southwestern United States and Northern Mexico, Bureau of American Ethnology, Bulletin 34, 1908.

<sup>4/</sup> The Old Americans. Williams and Wilkins, Baltimore. 1925.

<sup>5/</sup> Among studies made see F. Boas, The American People. Science, May 28, 1909: 839 ff; Ibid. Changes in Bodily Form of Descendants of Immigrants. Columbia University Press, 1912; Ibid. Report on an Anthropometric Investigation of the Population of the United States. Journal of the American Statistical Association 18:181-209, 1922; G. T. Bowles, New Types of Old Americans at Harvard and at Eastern Women's Colleges. Harvard University Press, 1932; E. A. Hooton, What is an American? American Journal of Physical Anthropology. 22:1-26, 1936; H. L. Shapiro, A Portrait of the American People. Natural History 54:248-255, 1945; T. D. Stewart, Anthropology and the Melting Pot. Annual Report of the Smithsonian Institution for 1946:315-344, 1947; T. D. Stewart, The People of America. Scribners, 1973.

For some Southwestern area American Indians there were enough data to allow separate tribal-national groups to be considered as units---these were the peoples identified by Hrdlicka as Apache, Pueblo, Hopi, Zuni, Mohave-Yuma, Maricopa, and Pima-Papago.

There is something to be desired in terms of this being an ideal body of data to analyze. The California Indian records are too scant for particular groups to analyze on a tribe-by-tribe basis and therefore, as already stated, we were forced to combine a number of small sets of tribal data into larger and quantitatively more meaningful units.<sup>6/</sup>

We know nothing about the field sampling procedures used, and assume that Hrdlicka as well as the several ethnographers who contributed data for Gifford's compilation secured as many individual dynamometer measurements as they were able under the undoubtedly variable situations. Presumably no conscious effort was made to select persons on the basis of sex or age, so the data are essentially a grab sample. For this reason we decided to use as conservative a statistical procedure as possible in the attempt not to exploit results which might be due to sampling aberrations. The technique chosen was analysis of variance (ANOVA) where the unit of analysis was the means for each cell. In other words, data on individuals were not used in the ANOVA but only the means obtained from the individual data.

In order to remove the variance due to sex and age 3 way ANOVA was performed where the three factors were tribe, sex, and age groups. After the ANOVA produced a significant F for tribes, Tukey contrasts were performed to indicate exactly which pairs of tribes were significantly different.

The ANOVA on the means showed significant differences, at the .05 level, between tribes in both the right and left hands. The ANOVA tables are given below:

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<sup>6/</sup> Gifford's data on dynamometer tests include persons of all ages from 18 California tribes. For purposes of comparability we used measurements only of men and women between 21 and 60 years of age. The Central California tribes in our sample include persons identified as Wintu (Nomlaki), Pomo, Yana Salinan, Patwin, Maidu, Sierra Miwok, Yokuts, Monache and Chumash. The Northern California groups represented are Hupa, Karok, Yurok, Chimariko, Achomawi, Atsugewi, Chilula and Whilkut.

## ANALYSIS OF VARIANCE: RIGHT HAND

SOURCE	SUM OF SQUARES	DEG. OF FREEDOM	MEAN SQUARE	EXPECTED MEAN SQUARE	F	p
MEAN	85294.31	1	85294.31	80.000		
T(Tribe)	239.8632	9	26.65146	8.000	3.01	.025
S(Sex)	5752.832	1	5752.832	40.000	650.57	.001
A(Age)	632.8215	3	210.9405	20.000	23.86	.001
TS	107.8633	9	11.98481	4.000	1.36	*
TA	186.5256	27	6.908357	2.000	.78	*
SA	79.26831	3	26.42276	10.000	2.99	.05
TSA	238.7556	27	8.842800	1.000		

## ANALYSIS OF VARIANCE: LEFT HAND

SOURCE	SUM OF SQUARES	DEG. OF FREEDOM	MEAN SQUARE	EXPECTED MEAN SQUARE	F	p
MEAN	70471.69	1	70471.69	80.000		
T(Tribe)	436.2207	9	48.46896	8.000	8.70	.001
S(Sex)	4485.008	1	4485.008	40.000	804.63	.001
A(Age)	459.1738	3	153.0579	20.000	27.46	.001
TS	146.5078	9	16.27864	4.000	2.92	.025
TA	117.8418	27	4.364511	2.000	.78	*
SA	40.03320	3	13.34440	10.000	2.39	*
TSA	150.4980	27	5.574001	1.000		

More detailed analysis after the ANOVA revealed only one significant difference on the right hand--in this case between the Northern California Indians and the Southwestern Papago and Pima groups. Detailed contrasts on the left hand data revealed several pairs of significant differences. Of particular interest was the finding that the Old Americans were considerably weaker in muscular strength than the Central and Northern California Indians and the Apache Indians in the left hand. Furthermore, the Old Americans were not significantly stronger than any of the Indian tribes represented in our data. So we may conclude that the Old Americans measured by Hrdlicka and the Native Americans in California and the Southwest measured by Hrdlicka and other anthropologists, insofar as they can be taken as representative of whites and Indians, do show differences in muscular strength as measured with the Collins dynamometer, and that the Indians prove to be (except for the Papago) not weaker but stronger. If this is accepted, then the century-old implication that the California Indians succumbed to the white invasion because they were a physically weak people who could not stand up against the more powerful whites may not be true. We are, of course, aware that physical strength can be assessed by other means than the muscular force exerted by the right and left hands.

Generally speaking, there is little doubt but that the Indian way of life, both for males and females, involved more vigorous physical activities than did the life routine of most, if not all, of Hrdlicka's sample of Old Americans. We cannot support this last allegation with evidence that amounts to proof, but if we take the range of acti-

vities that men and women in aboriginal California societies engaged in<sup>7/</sup> and compare this with urban American male-female activities in the first two decades of the present century, we believe that it is positive that Indians, in the course of daily existence, used their muscles to a far greater extent. Granted this, Indians may have developed muscular strength to a higher degree of its potential than the urban whites to whom they are compared. If we could reverse the roles and have the same male and female Old Americans living as Indians were at the time the latter were measured with the Collins dynamometer, we might find the Indians' record was no better than the whites. We know of no way to resolve this question which revolves around the differential of life patterns experienced by two different racial groups who were operating in what were essentially different cultural worlds. But this is, after all, not the matter we were addressing ourselves to--our inquiry was aimed at trying to learn whether California Indians were a weakling segment of humanity, and although we have compared Indian muscular force records against those of Old Americans of the same period in the early twentieth century, we have no data for either group from a half-century earlier when the question of the Indian's physical inferiority was raised. How urban and rural whites and Indians would have performed if a Gifford or Hrdlicka had journeyed about in the eighteen-fifties with a Collins dynamometer (not yet invented) we cannot say, but we would incline to think that, relatively, things were the same, and that Indian men and women would have been a match for the newly Argonauts.

Many otherwise informed people in California still believe (because they were so taught by their third and fourth grade teachers) that the California Indians (often still referred to as "Diggers") were a "low-cultured" people who ate acorns, did not practice agriculture or make beautiful pottery, and hold the idea that they were physically inferior and that this accounts for their failure to withstand the onslaught of the whites. The real reason why the California Indians succumbed to the whites surely lies in other factors, among them being a long tradition of maintaining political independence, being divided into perhaps as many as 500 autonomous units (Kroeber calls them tribelets or ethnic nationalities), and thus being unable to meet the threat of the whites by general and united action. Also involved, we believe, was a world view shared by most California Indians which placed value on getting along with other people rather than glorifying aggressive behavior. The gold miners of the eighteen-fifties and eighteen-sixties were a particularly rough bunch who were armed to the teeth with pistols and repeating rifles, and with their attitudes about how worthless Indians were, with a "shoot first and talk afterwards" behavior, they found the Indian with his bow and arrow an easily bested foe.

The significant differences between the Old Americans and Indian tribes for the left hand (see Table 2) are summarized in the following table. Here the groups are arranged from weakest to strongest in terms of performance with the Collins dynamometer. Vertical lines at the right indicate groups within which no significant

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<sup>7/</sup> N. C. Willoughby. Division of Labor Among the Indians of California. University of California Archaeological Survey, Report No. 60:1-79, 1963.



differences were found.

Papago	26.2	
Old Americans	27.4	
Hopi	27.8	
Zuni	28.6	
Pueblo	28.7	
Mohave	28.8	
Maricopa	30.7	
Central Calif.	32.3	
Apache	32.5	
North Calif.	33.5	

We secured essentially the same results when ANOVA and detailed comparisons were made on the data for the left hand of men and of women.

The means used in the ANOVA and other detailed contrasts are shown in the following table. Many differences between groups defined by sex and age are obvious in this tabulation, but the figures bear out our conclusion that western American Indians were physically able peoples who were not inferior in this regard to the American whites who usually wrote and acted as though they were superior. The whites were, of course superior in the literal sense of the word when we apply it to the situation of the face-to-face meeting in combat of the two groups. But whether the victor in such an unequal contest--one which he has clearly won--is justified in taking this as proof of his superiority in any other than a win-or-lose sense, we can question. The recent U. S. -Indochina war is another of these unequal technological-racial-political contests. The United States drained off its treasure (money as well as irreplaceable natural materials) and men (50,000 dead) in a war which it lost. The United States fought that war against a people it was forced to dehumanize in much the same way it tried to dehumanize the California Indians. But that formula did not any longer work in 1970 as it had in 1850, and this we take as a hopeful sign that things are a little better than they were a century ago.

		Old American	Northern California	Central California	Apache	Pueblo	Hopi	Zuni	Mohave Yuma	Maricopa	Papago Pima
Male	24-29	42.3 (86)	56.2 (3)	53.0 (3)	46.0 (28)	41.6 (15)	41.9 (21)	41.4 (19)	43.0 (24)	47.8 (7)	39.9 (31)
	30-39	43.2 (61)	48.8 (9)	37.0 (1)	45.6 (7)	42.9 (15)	40.7 (16)	39.1 (16)	49.0 (11)	44.2 (11)	40.9 (23)
	40-49	40.9 (45)	43.8 (5)	39.8 (8)	41.8 (10)	38.6 (11)	38.1 (4)	41.0 (8)	38.4 (9)	48.0 (12)	38.0 (22)
	50-59	40.3 (33)	36.1 (7)	37.4 (12)	32.4 (5)	34.4 (11)	33.3 (8)	31.2 (11)	36.3 (21)	38.3 (7)	32.7 (12)
	Mean	41.7 (225)	46.2 (24)	41.8 (24)	41.4 (50)	39.4 (52)	38.5 (49)	38.2 (54)	41.7 (65)	44.6 (37)	37.9 (88)
Female	22-29	25.2 (70)	28.3 (7)	27.3 (3)	26.4 (11)	24.7 (14)	26.7 (7)	27.9 (5)	24.8 (5)	29.5 (6)	23.9 (15)
	30-39	24.0 (68)	27.8 (9)	26.0 (6)	26.9 (5)	23.2 (5)	25.4 (10)	24.7 (6)	25.7 (10)	28.9 (12)	22.9 (15)
	40-49	23.0 (32)	18.0 (4)	22.0 (1)	25.7 (8)	21.1 (6)	25.7 (5)	24.3 (6)	27.6 (8)	22.2 (5)	20.8 (13)
	50-59	18.3 (26)	26.3 (8)	22.8 (5)	25.3 (2)	20.8 (3)	20.9 (7)	21.8 (12)	22.3 (6)	19.1 (7)	18.7 (13)
	Mean	22.6 (196)	25.1 (28)	24.5 (15)	26.1 (26)	22.4 (28)	24.7 (29)	24.7 (29)	25.1 (29)	24.9 (30)	21.6 (56)
Overall Mean	32.1 (421)	35.7 (52)	33.2 (39)	33.8 (76)	30.9 (80)	31.6 (78)	31.4 (83)	33.4 (94)	34.7 (67)	29.7 (144)	

Table 1. Means on right hand pressure, measured in kilograms, for Old American whites and Native Americans. Figures in parentheses are numbers of persons in each age or sex group sample. Data from Gifford (1926) and Hrdlicka (1908, 1925).

		Old American	Northern California	Central California	Apache	Pueblo	Hopi	Zuni	Mohave Yuma	Maricopa	Papago Pima
Male	24-29	37.2 (86)	52.7 (3)	41.7 (3)	42.9 (28)	38.8 (15)	37.6 (21)	38.3 (19)	38.7 (23)	39.9 (7)	35.7 (32)
	30-39	37.0 (61)	45.7 (9)	38.5 (2)	43.9 (7)	39.1 (16)	36.1 (16)	36.4 (17)	41.5 (11)	38.1 (11)	36.3 (23)
	40-49	35.7 (45)	41.8 (5)	34.2 (6)	41.5 (10)	35.6 (11)	33.6 (4)	35.2 (9)	33.3 (9)	43.1 (12)	33.4 (22)
	50-59	34.0 (33)	36.5 (6)	39.1 (9)	32.1 (5)	33.0 (11)	27.8 (8)	28.1 (12)	30.8 (21)	32.9 (7)	28.9 (12)
	Mean	36.0 (225)	44.2 (23)	38.4 (20)	40.1 (50)	36.6 (53)	33.8 (49)	34.5 (57)	36.1 (64)	38.5 (37)	33.5 (89)
Female	22-29	21.1 (70)	26.4 (7)	26.7 (3)	25.5 (11)	22.9 (14)	23.1 (7)	25.6 (5)	22.4 (5)	27.5 (6)	20.3 (15)
	30-39	20.0 (68)	25.4 (9)	28.0 (6)	25.9 (5)	22.1 (5)	22.8 (10)	22.6 (6)	20.9 (10)	25.7 (12)	20.1 (15)
	40-49	19.4 (32)	17.3 (3)	26.0 (1)	24.1 (8)	19.5 (6)	22.3 (5)	22.3 (6)	23.9 (8)	21.7 (5)	19.1 (14)
	50-59	15.1 (26)	22.5 (8)	24.6 (5)	24.5 (2)	18.8 (3)	19.3 (7)	20.2 (13)	18.8 (6)	17.1 (7)	16.2 (13)
	Mean	18.9 (196)	22.9 (27)	26.3 (15)	25.0 (26)	20.8 (28)	21.9 (29)	22.7 (30)	21.5 (29)	23.0 (30)	18.9 (57)
Overall Mean	27.4 (421)	33.5 (50)	32.3 (35)	32.5 (76)	28.7 (81)	27.8 (78)	28.6 (87)	28.8 (93)	30.7 (67)	26.2 (146)	

Table 2. Means on left hand pressure, measured in kilograms, for Old American whites and Native Americans. Figures in parentheses are numbers of persons in each sex or age group sample.