722135

State of California

Department of Public Health

Memorandum

To : Siri
Sargent
Bruyn
Gaffey and Clark

Date : June 15, 1964

Subject :

From : Bureau of Public Health Nutrition

This is a rough draft of the first paper on the obesity study. I should appreciate any comments you may have. We will try to have this published in the Journal of Chronic Diseases if this meets with your approval.

Other papers we propose to publish are: 1) results of anthropometric and laboratory measurements with the regression equations, 2) diet and physical activity results with relation to measured and estimated body fat, 3) cesium 137 results with relation to diet and 4) somatotype results with relation to measured and estimated body fat.

I should appreciate your early comments.

Sincerely,

Ruth C. Steinkamp, M.D.
Medical Consultant

RCS:eh
Attachment

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Measures of Body Fat and Related Factors in Normal Adults
I. Introduction and Methodology

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E. Isaacs, B.A. and
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California State Department of Public Health, Bureau of Public Health Nutrition with the cooperation of Donner Laboratory, University of California, Berkeley. Supported in part by National Institutes of Health Grant CD 00009 (formerly A-5907).

*Deceased April 26, 1963.

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TABLE 1

NUMBER OF PARTICIPANTS

Race	Sex	Age in Years	Anthropometric Measurement	Interview	Laboratory Measurement: TBW and Specific Gravity	Laboratory Measurement: K40, Cs137	Somato-type	Somatotype and Laboratory Measurements
White	Males	25-34	478	107	35	23	119	9
		35-44	416	106	34	25	21	4
	Females	25-34	379	101	33	12	17	1
		35-44	438	101	31	16	9	1
Negro	Males	25-44	342	102	34	4	-	-
		Subtotal	2053	517	167	80	166	15
Negro	Females	25-44	154					
Oriental	Males	25-44	32					
	Females	25-44	44					
Other	Males	25-44	15					
	Females	25-44	6					
		Total	2304	517	167	80	166	15

Note: TBW = Total Body Water
K40 = Potassium-40
Cs137= Cesium-137

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Alameda County Employees

Alta Bates Hospital

Berkeley City Employees

Berkeley League of Women Voters

Berkeley Tennis Club

California Packing Corporation

California State Department of Health

California State Department of Public Works (Toll Plaza)

City of Oakland Employees

Durkee Famous Foods, Inc.

Emporium

Fireman's Fund Insurance Company

Gerber Products Company

International Business Machines

International Toastmistresses Club

League of Women Voters, Berkeley

Mary Ellen Jams and Jellies, Inc.

Men of Tomorrow

Metropolitan Life Insurance Company

Moore Business Forms

Mount Everest Expedition Team

Saint Cyprian's Episcopal Church

San Francisco General Hospital

San Jose City Health Department

San Mateo County Health Department

Santa Clara County Health Department

Shell Oil Company

Standard Oil Company

University of California Staff and Students (Berkeley)

University of California Workshop

U.S. Department of Agriculture

Extension Service and Western Regional Laboratories

U.S. Naval Supply Center

U.S. P.H.S. Hospital

Women's Auxiliary, Berkeley City Firemen

Women's Auxiliary, Berkeley City Policemen

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TABLE 2
CLASSIFICATION OF WORK AND EXERCISE

Very Light (<2.5 cal./min.)	Light (2.5-4.9 cal./min.)	Moderate (5.0-7.4 cal./min.)	Strenuous (>7.5 cal./min.)
Standing, at base	Personal care	Walking, mod. to fast	Running
Lying	Walking, slowly	Walking, mod. up hill	Walking fast up hill
Sitting	Standing using arm movement	Housework, stooping and bending	Climbing a ladder Skiing
Sitting, using arm movements	Housework except stooping and bending	Swimming	Walking in snow
Reading	Light gardening	Heavy gardening	Digging
Writing Knitting	Driving car, motorcycle	Tennis	Sawing wood
Sewing	Golfing	Dancing	Planing wood
Typing	Carpentry work	Bicycling	Shoveling
Light machine work	Gymnastic exercises, except hopping	Bowling	Carrying load upstairs
Light assembly line	Mixing cement	Gymnastic exercises, hopping and swinging arms	Playing football
	Playing with child	Stacking firewood Using pickaxe Bushing wheelbarrow	Chopping with an axe

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Ranges, Means and Standard Deviations for Somatotype, Determined and Estimated Body Composition and Anthropometric Measurements for 12 Men

	Mean	S.D.	Range	Median
Age, years	30.2	--	24 - 41	29.0
Endomorphy	36.5	11.715	15 - 60	
Mesomorphy	42.9	8.529	30 - 60	
Ectomorphy	33.3	12.134	10 - 55	
% Under Somatotype Wt.	13.2	10.566	3 - 41	
Andric	22.3	1.795	20 - 26	
Gynic	22.0	1.155	20 - 24	
Kg Determined Body Fat	14.1	6.670	6.0- 28.2	
Kg Determined LBM	56.5	5.537	49.4- 68.2	
% Body Wt. Det. as Fat	19.4	7.046	8.3- 33.4	
Kg Est. B.F.	14.0	6.145	6.0- 23.5	
Kg LBM	56.4	5.200	47.8- 66.8	
% Body Wt. Est. as Fat	19.3	6.588	10.3- 27.5	
T. Body Wt., pounds	154.9	20.365	128.6-196.8	
Height, cm	179.2	6.280	165.2-188.6	
Biac. D., cm	39.1	2.019	35 - 42	
AP Chest D., cm.	16.2	2.165	14 - 22	
Bi-iliac D., cm	29.3	3.448	26 - 40	
Chest C., cm	93.3	7.846	80 -112	
Waist C., cm	78.4	6.837	69 - 90	
Iliac C.C., cm.	86.2	9.619	76 -105	
Arm C., cm	31.1	1.891	28 - 33	
Wrist C., cm	17.2	0.898	16 - 18	
Thigh C., cm	50.4	2.900	45 - 55	
Ankle C., cm	21.5	1.190	20 - 24	
Arm Length, cm	38.4	1.847	36 - 42	
Thigh Length, cm	40.9	4.172	36 - 52	
R. Arm SF, mm	7.8	4.580	3 - 18	
R. Scap SF, mm	11.1	5.823	6 - 24	
Thor S.F., mm	11.3	7.542	4 - 30	
Abd SF, mm	13.3	11.025	4 - 42	
Ave. SF., mm	10.9	6.518	5.0- 25.2	
Gubner	39.6	3.303	34 - 45	
Ponderal	13.2	0.507	12.4- 14.2	
% Std. Wt.	96.2	10.771	77 -112	
AP Iliac, cm	20.4	0.800	20 - 22	
Thigh D., cm	15.5	0.500	15 - 16	

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Ranges, Means and Standard Deviations for Somatotype, Estimated Body Composition and Anthropometric Measurements for 26 Women

	Mean	S.D.	Range	Median
Age, years	33.2	--	25 - 43	33.0
Endomorphy	50.1	8.752	20 - 65	
Mesomorphy	34.4	8.806	10 - 50	
Ectomorphy	31.4	11.429	10 - 50	
% Under Somatotype Wt.	16.8	7.024	7 - 35	
Andric	23.0	3.246	16 - 34	
Gynic	21.6	2.150	14 - 24	
Kg Est. Body Fat	19.3	4.898	9.2- 30.4	
Kg Est. LBM	39.7	4.326	32 - 48.8	
Est. % Body Wt. as Fat	32.4	5.741	19.7- 43.7	
T. Body Wt., pounds	129.2	16.165	102.6-165.1	
Height, cm.	165.2	6.244	153.3-178.4	
Biacr. D., cm	35.3	2.385	30 - 40	
AP Chest D., cm.	15.5	1.247	14 - 18	
Biiliac D., cm	27.5	1.599	25 - 30	
Chest C., cm	84.3	3.658	78 - 92	
Waist C., cm	68.9	3.856	60 - 76	
Iliac Cr. C., cm	85.7	6.421	73 - 99	
Arm C., cm	27.2	2.161	22 - 31	
Wrist C., cm	14.8	0.818	14 - 16	
Thigh C., cm	51.1	4.521	43 - 63	
Ankle C., cm	20.8	1.520	18 - 25	
Arm Length, cm	34.5	2.080	30 - 38	
Thigh Length, cm	39.3	4.520	22 - 46	
R Arm SF, mm	19.4	6.306	6 - 34	
R Scap. SF, mm	13.8	5.715	8 - 28	
R Thor SF, mm	13.2	5.487	5 - 26	
Abd SF, mm	25.8	10.753	9 - 54	
Ave SF, mm	18.0	5.998	8.5- 31.0	
Quetelet Index	37.7	2.565	33 - 42	
Ponderal Index	12.9	0.483	11.9- 13.7	
% Standard Weight	103.0	11.024	87 -127	

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Ranges, Means and Standard Deviations for Somatotype, Estimated Body Composition and Anthropometric Measurements for 127 Men

	Mean	S.D.	Range	Median
Age, years	29.7	--	24 - 43	28.2
Endomorphy	41.7	8,557	10 - 63	
Mesomorphy	44.2	8.475	25- - 65	
Ectomorphy	29.1	10.797	10 - 60	
% under S.W.	11.3	6.972	0 - 34	
Andric	22.5	2.061	18 - 32	
Gynic	22.7	1.538	18 - 26	
Kg est. Body Fat	19.3	6.394	3.3- 37.9	
Kg est LBM	55.9	5.165	45.1- 73.4	
% Body Wt. est. Fat	25.2	6.224	6.3- 41.6	
T. Body Wt. pounds	165.5	20.409	114.6-244.7	
Height, cm	179.1	5.883	167.0-194.4	
Biac. D., cm	40.1	1.801	36 - 44	
AP Chest D., cm	16.7	1.351	14 - 21	
Bi-iliac D., cm	29.5	2.019	26 - 39	
Chest C., cm	95.7	5.527	82 -117	
Waist C., cm	83.2	6.745	68 -112	
Iliac Cr. C., cm	89.7	7.614	73 -118	
Arm C., cm	31.4	2.502	24 - 41	
Wrist C., cm	17.4	0.903	16 - 20	
Thigh C., cm	52.7	3.571	43 - 65	
Ankle C., cm	22.3	2.061	19 - 40	
Arm Length, cm	37.9	1.798	34 - 42	
Thigh Length, cm	40.1	3,019	22 - 49	
BASF, mm	11.7	4.549	3 - 23	
R Scap SF, mm	11.6	3.662	6 - 24	
R Thor SF, mm	13.2	5.748	4 - 36	
Abd SF, mm	16.5	9.429	4 - 50	
Ave SF, mm	13.3	5.286	4.2- 32.8	
Gubner Index	37.8	3.208	25 - 45	
Ponderal Index	12.9	0.487	11.0- 14.1	
% Std. Wt.	102.7	11.212	76 -158	
AP Iliac Crest, cm	22.8	5.027	18 - 44	
Thigh D., cm	16.2	1.214	13 - 20	

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