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This volume is the second of three volumes comprising the final re of the research project "Biomechanics of Low Coal." It covers only the anthropometric study of low coal miners. Volume I summarizes the overa biomechanical, anthropometry, and work physiology study conducted. Dev lopment of work clothes modified to meet the needs of low coal miners i described in Volume III. The male and female anthropometry, with the exception of weight and circumferential dimensions, was quite similar t the comparison populations. The miners tended to be heavier and have greater circumferences. The measurements made in this study were used develop 5th, 50th and 95th percentile, quarter and half scale, male anc female mannequins. These mannequins can be used in work place and equi ment design and redesign.

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FOREWARD

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TABLE 1. Anthropometric Data for Male Low Coal Miners

	V	MIN	X5	MEAN	X95	MAX	STD	N
1	AGE	20.0	15.806	34.526	53.246	61.0	11.380	135
2	WEIGHT	54.4	54.156	81.858	109.560	189.3	16.840	132
3	U_TH_CIR	42.1	47.277	59.238	71.199	90.0	7.271	93
4	FUN_RCH	70.6	72.978	79.267	85.556	88.6	3.823	114
5	HEIGHT	157.3	163.687	174.407	185.127	187.1	6.517	136
6	CER_HT	132.8	139.500	148.531	157.562	160.8	5.490	61
7	SHLDR_HT	128.4	133.291	143.200	153.109	162.8	6.024	94
8	WAIST_HT	92.3	95.148	102.355	109.562	112.0	4.381	94
9	HEAD_CIR	53.0	53.229	57.159	61.089	67.4	2.389	83
10	NECK_CIR	33.0	33.927	40.088	46.249	59.0	3.745	94
11	SHLD_CIR	98.0	103.302	119.537	135.772	151.0	9.869	94
12	CHST_CRS	81.8	88.791	103.654	118.517	134.4	9.035	84
13	CHEST_CR	78.8	84.332	100.743	117.154	143.9	9.976	114
14	WAIST_CR	62.8	71.017	92.395	113.773	135.4	12.996	114
15	HIP_CIR	85.0	87.435	101.029	114.623	131.0	8.264	83
16	U_CLF_CR	27.1	29.981	37.454	44.927	55.4	4.543	94
17	SHDR_LTH	11.5	12.535	14.784	17.033	18.0	1.367	83
18	BACK_WDT	33.0	33.462	45.127	56.792	60.0	7.091	84
19	BACK_LTH	37.0	41.742	49.133	56.524	59.0	4.493	84
20	TNK_CIR	152.5	155.552	171.661	187.770	202.0	9.793	83
21	ARM_SCY	39.0	40.977	47.417	53.857	56.2	3.915	83
22	BCP_CIR	25.8	28.795	35.053	41.311	48.0	3.804	94
23	F_ARM_CR	25.0	26.461	30.547	34.633	37.3	2.484	94
24	TORSO_LT	38.4	42.681	51.811	60.941	64.0	5.550	83
25	CRW_CIR	59.8	67.538	89.494	111.450	142.0	13.347	94
26	CW_TK_CR	150.8	152.231	168.168	184.105	197.0	9.688	82
27	CW_HD_HT	67.3	70.023	78.612	87.201	93.8	5.221	113
28	CWL_SHD	54.1	61.237	68.373	75.509	86.0	4.338	94
29	UP_KN_HT	78.3	112.823	128.442	144.061	171.3	9.495	111
30	SIT_HT	79.9	83.376	89.762	96.148	99.3	3.882	94
31	KNEE_HT	36.6	38.581	42.052	45.523	47.2	2.110	94
32	BT_KN_LT	51.6	55.177	60.086	64.995	67.5	2.984	113
33	SEL	31.5	33.595	36.660	39.725	40.2	1.863	114
34	EFT_LNT	41.3	44.033	47.608	51.183	52.9	2.173	114
35	EL_KN_L	29.2	32.151	35.472	38.793	44.9	2.019	94
36	EL_EL_BR	36.2	39.384	48.514	57.644	69.0	5.550	94
37	HEAD_LTH	18.2	18.424	19.635	20.846	21.5	0.736	84
38	S_HP_BT	30.7	30.978	36.869	42.760	48.5	3.581	112
39	FOOT_LTH	22.2	24.113	26.151	28.189	28.7	1.239	84
40	FOOT_BTH	8.0	8.878	10.057	11.236	11.9	0.717	84
41	HND_LTH	16.3	17.243	18.768	20.293	21.4	0.927	114
42	HND_BTH	7.8	8.187	8.949	9.711	10.1	0.463	113

TABLE 1. (cont.)

Glossary of Anthropometric Abbreviations

1. AGE = age (in years)
2. WEIGHT = weight (in kilograms)
3. U. TH. CIR = upper thigh circumference
4. FUN. RCH = functional reach
5. HEIGHT = height
6. SHLDR. HT = shoulder height
7. WAIST HT = waist height
8. HEAD CIR = head circumference
9. NECK CIR = neck circumference
10. CHEST CIR = chest circumference
11. WASIT CIR = waist circumference
12. HIP CIR = hip circumference
13. U. CLF. CR = upper calf circumference
14. SHDR. LTH = shoulder length
15. BACK LTH = back length
16. TNK. CIR = vertical trunk circumference
17. ARM SCY = arm circumference at scye
18. BCP. CIR = bicep circumference
19. F. ARM. CR = forearm circumberence
20. SIT. HT = sitting height
21. POPL. HT = popliteal height
22. BT. KN. LT = buttock- knee length
23. HEAD LTH = head length
24. S. HP. BT = sitting hip breadth
25. FOOT LTH = foot length
26. FOOT. BTH = hand breadth
27. HAND LTH = hand length
28. HAND BTH = hand breadth
29. CER. HT = cervicale height
30. SHLD. CIR = shoulder circumference
31. CHST. CRS = chest circumference at scye
32. BACK WDT = back width
33. TORSO LT = torso length
34. CRW. CIR = crawling waist circumference
35. CW. TK. CR = crawling trunk circumference
36. CW. HD. HT = crawling shoulder height
37. CWL. SHD = crawling shoulder height
38. UP. KN. HT = upright kneeling height
39. SEL = shoulder-elbow length
40. EFT. LNT = elbow-fingertip length
41. EL. GP. L = elbow-center of grip length
42. EL. EL. BR = elbow-elbow breadth

TABLE 2. Anthropometric Data for Female Low Coal Miners

	V	MIN	X5	MEAN	X95	MAX	STD	N
1	AGE	18.0	18.100	29.661	41.222	48.0	7.028	56
2	WEIGHT	44.9	45.291	63.379	81.467	95.2	10.996	56
3	U_TH_CIR	49.0	51.028	58.031	65.034	67.4	4.257	55
4	FUN_RCH	58.5	61.583	73.355	85.127	92.2	7.156	55
5	HEIGHT	148.0	151.465	161.695	171.925	174.6	6.219	56
6	CER_HT	129.2	130.432	139.391	148.350	150.5	5.446	23
7	SHLDR_HT	122.0	123.501	133.674	143.847	143.7	6.184	54
8	WAIST_HT	89.3	90.638	98.700	106.762	109.8	4.901	55
9	HEAD_CIR	50.2	51.785	54.155	56.525	58.0	1.441	42
10	NECK_CIR	29.6	30.345	33.020	35.695	37.0	1.626	55
11	SHLD_CIR	88.3	92.675	103.427	114.179	123.0	6.536	55
12	CHST_CRS	80.3	78.804	87.353	95.902	101.0	5.197	32
13	CHEST_CR	75.4	78.661	90.518	102.375	114.3	7.208	55
14	WAIST_CR	62.0	61.147	75.807	90.467	98.0	8.912	55
15	HIP_CIR	86.0	86.388	98.865	111.342	119.9	7.585	31
16	U_CLF_CR	29.8	29.580	34.462	39.344	41.1	2.968	55
17	SHDR_LTH	12.0	12.002	13.672	15.342	16.0	1.015	32
18	BACK_WDT	31.0	31.487	36.784	42.081	46.0	3.220	32
19	BACK_LTH	36.0	37.742	42.044	46.346	47.0	2.615	32
20	TNK_CIR	140.7	141.980	152.316	162.652	172.3	6.283	32
21	ARM_SCY	37.0	36.239	41.319	46.399	52.0	3.088	32
22	BCP_CIR	23.5	24.336	29.302	34.268	39.9	3.019	55
23	F_ARM_CR	22.4	22.956	25.655	28.354	29.5	1.641	55
24	TORSO_LT	40.0	40.031	44.913	49.795	51.2	2.968	31
25	CRW_CIR	62.2	59.154	74.178	89.202	104.8	9.133	55
26	CW_TK_CR	136.0	140.353	154.513	168.673	160.1	8.608	31
27	CW_HD_HT	57.4	59.677	69.749	79.821	82.3	6.123	55
28	CWL_SHD	50.0	54.325	60.280	66.235	71.4	3.620	55
29	UP_KN_HT	111.1	114.491	121.913	129.335	130.8	4.512	55
30	SIT_HT	67.3	78.216	85.505	92.794	92.9	4.431	55
31	KNEE_HT	32.7	35.021	38.278	41.535	42.0	1.980	55
32	BT_KN_LT	51.4	52.235	57.117	61.999	64.7	2.968	54
33	SEL	25.2	29.232	33.091	36.950	38.0	2.346	55
34	EFT_LNT	39.6	40.188	43.516	46.844	48.7	2.023	55
35	EL_KN_L	29.2	29.669	32.676	35.683	37.1	1.828	55
36	EL_EL_BR	30.9	35.103	42.731	50.359	54.9	4.637	55
37	HEAD_LTH	16.1	17.126	18.574	20.022	20.2	0.880	42
38	S_HP_BT	32.7	34.077	38.857	43.637	46.9	2.906	54
39	FOOT_LTH	21.5	22.076	23.886	25.695	26.2	1.100	42
40	FOOT_BTH	8.2	8.372	9.298	10.224	10.6	0.563	42
41	HND_LTH	15.2	15.923	17.395	18.867	19.7	0.895	55
42	HND_BTH	7.0	7.175	7.775	8.375	8.6	0.365	55