## **DETERMINING YOUR BODY FAT**

The first step in determining your composition is to calculate your body fat as a percentage of your total weight. Refer now to the worksheet for computing your percentage of body fat. (The calculations vary with gender, so make sure you're using the appropriate one for you and follow the instructions. We'll take each gender in turn.)

### FOR WOMEN:

1. Measure your height in inches without shoes.

2. Using the measurements you made before, record your height, waist, and hip measurements in the labeled spaces on the worksheet on page 70.

3. Turn to the conversion constants chart for women and find each of these average measurements in the appropriate column. Record the adjacent constants (A for hips, B for abdomen, and C for height) on the worksheet where indicated. These constants have been derived experimentally and allow you to convert your measurements into a form that can be used to compute your body fat percentage.

## WOMEN: COMPUTING YOUR BODY FAT PERCENTAGE

First, find your ave	erage measi	arements IN	INCHES:
	Hips	Abdomen	Height
Measurement #1	••••••••••••••••••••••••••••••••••••••		
+			
Measurement #2			
+			
Measurement #3		·····	
Total =	<b></b>		
Divide by $3 =$			

4. Using the chart that follows, look up each of these average measurements and your height in the appropriate column. The numbers listed beside them will be constant A (hips), constant B (abdomen), and constant C (height). Use these constants below. Add constants A and B, then subtract constant C from their sum. Round your answer to the nearest whole number. This figure is your percentage of body fat.



	HIPS	AB	DOMEN	HE	IGHT
INCHES	CONSTANT A	INCHES	CONSTANT B	INCHES	CONSTANT C
30	33.48	20	14.22	55	33.52
30.5	33.83	20.5	14.40	55.5	33.67
31	34.87	21	14.93	56	34.13
31.5	35.22	21.5	15.11	56.5	34.28
32	36.27	22	15.64	57	34.74
32.5	36.62	22.5	15.82	57.5	34.89
33	37.67	23	16.35	58	35.35
33.5	38.02	23.5	16.53	58.5	35.50
34	39.06	24	17.06	59	35.96
34.5	39.41	24.5	17.24	59.5	30.11
30	40.40	25	17.78	60 F	30.57
35.5	40.81	25.5	17.90	00.5	30.72
30	41.80	20	18.49	01	37.10
30.0	42.21	20.0	10.07	01.0	37.33
3/	43.20	2/	19.20	02	37.79
37.5	43.00	27.5	19.30	62.0	37.94
30 20 E	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	19.91	63 5	30.40	
30.0		20.09	64	30.00	
39 20 F		20.02	64 5	20.16	
39.0		20.00	65	39.10	
40		21.00	00	39.02	
40.5		21.01	00.0	39.77	
41		22.04	66 5	40.23	
41.0		22.22	67	40.30	
42	50.24	32 5	22.70	67.5	40.04
42.0	51.64	32.0	22.50	69	40.99
40	51.04	22 5	23.40	69.5	41.40
43.0	52.02	24	23.04	60.5	41.00
44	53.03	34 5	24.10	60 5	42.00
44.0	54 52	34.0	24.30	70	42.21
45 5	54.86	35.5	25.03	70 5	42.07
45.5	55.83	36	25.60	70.5	43.28
40	56 18	36.5	25.00	715	43.20
40.0	57 22	37	26.31	77.0	43.80
475	57 57	37.5	26.01	72 5	40.00
48	58.62	38	27.02	73	44.50
185	58 97	38.5	27.20	73 5	44.65
40.0	60.02	30.0	27.20	70.0	45.11
495	60.37	39.5	27.91	74.5	45.26
50	61 42	40	28.44	75	45.20
50 5	61 77	40.5	28.62	75.5	45.87
51	62.81	41	29.15	76	46.32
51.5	63.16	41.5	29.33	76.5	46.47
52	64.21	42	29.87	77	46.93
52.5	64.56	42.5	30.05	77.5	47.08
53	65.61	43	30.58	78	47.54

#### CONVERSION CONSTANTS TO PREDICT PERCENTAGE OF BODY FAT-WOMEN

53.5 54	65.96 67.00	43.5 44	30.76 31.29	78.5 79	47.69 48.15
54.5	67.35	44.5	31.47	79.5	48.30
55	68.40	45	32.00	80	48.76
55.5	68.75	45.5	32.18	80.5	48.91
56	69.80	46	32.71	81	49.37
56.5	70.15	<b>46</b> .5	32.89	81.5	49.52
57	71.19	47	33.42	82	49.98
57.5	71.54	47.5	33.60	82.5	50.13
58	72.5 <del>9</del>	48	34.13	83	50.59
58.5	72. <del>9</del> 4	48.5	34.31	83.5	50.74
59	73.99	49	34.84	84	51.20
59.5	74.34	49.5	35.02	84.5	51.35
60	75.39	50	35.56	85	51.81

Let's look at how one patient computed her body fat percentage. Lisa is 5'6" and weighs 157 pounds. She measured her hips at 38.5", 38", and 38.5". Her average hip measurement is 38.3 inches. (Calculate as follows: 38.5 + 38 + 38.5 = 115, and  $115 \div 3 = 38.3$ .) Lisa should round the hip measurement down to 38. Her abdomen measurements are 27", 26.5", and 27.75" for an average abdominal measurement of 27.08", rounded to 27. Turning to the conversion constants chart, she will find her hip measurement (38) and to its right constant A (44.65), then her abdominal measurement (27) and to its right constant B (19.20), and finally her height (66 inches) and to its right constant C (40.23). Following the worksheet, she will now add constants A and B (44.65 + 19.20 = 63.85), and from that number she will subtract constant C (63.85 - 40.23 =23.62). Lisa's body fat is 23.6 percent.

#### For Men:

1. Measure your wrist at the space between your hand and your wrist bone, where your wrist bends. Keep the tape snug, but do not compress the skin. Take three measurements for your wrist, record them on the worksheet, and compute the average.

2. Weigh yourself on a scale in pounds and record the weight in the appropriate space on the worksheet. Record the waist measurement you made earlier for the waist-to-hip ratio.

3. Subtract your average wrist measurement from your average waist measurement. Find this number listed as waist-minus-wrist across the top of the body fat calculation chart for men. On the left side of this table, find your weight. Follow across from your weight and down from your waist-minus-wrist measurement. Where these two columns intersect, you will find your body fat percentage. Let's work through an example using these worksheets and charts.

Mark weighs 200 pounds. He takes the following wrist measurements: 6.5", 6.75", and 6.75" for an average wrist measurement of 6.67". (Calculate as follows: 6.5 + 6.75 + 6.75 = 6.7.) His waist (abdomen) measurements are 38", 37.75", and 38.25" for an average of 38 inches. (Compute as follows: 38 + 37.75 + 38.25 = 114, and  $114 \div 3 = 38$ .) Mark will subtract his wrist measure from his waist (38 - 6.7 = 31.3) and round to the nearest one-half. Then he will find his waist-minus-wrist number (31) across the top of the conversion constants chart. Tracking down the left side of the chart, he will find his weight (200 pounds), and he will follow across to the column under his measure of 31 to find the number 22. Mark has a body fat percentage of 22 percent.

# MEN: COMPUTING YOUR BODY FAT PERCENTAGE

First, find your average measurements IN INCHES or POUNDS:

	Wrist	t	Waist	Weight
Measurement #1				
Measurement #2				
Measurement #3				
Total =				
Divide by $3 =$				
Waist				
measurement				
Minus wrist				
measurement				
	:	= "wa	ust minus	s wrist"

Using the waist-minus-wrist chart, find your weight in pounds in the left column. Find your "waist minus wrist" number across the top of the chart. Going across from the left and down from the top, find the point at which these two readings intersect. This figure represents your percentage of body fat:

\_\_\_\_\_ = percentage of body fat

# **Calculating Your Lean Body Weight**

Now that you've got a good estimate of your body fat percentage, you can use this number to compute your lean body weight. Because the body is made of two basic segments—fat weight and lean weight—if you know how much you weigh and what percent of your weight is fat, you can determine how much your lean tissue weighs.

First, take your weight in pounds and multiply it by your percentage of body fat as a decimal (for example, if your body fat is 42 percent, you would multiply by 0.42 to get your answer):

total weight  $\times$  % body fat = weight of fat in pounds

Once you know the weight of your body fat, you can subtract it from your total weight to get your lean body weight:

total weight - fat weight = lean body weight

For Lisa in our earlier example, the calculation would look like this: Her weight (157 pounds) times her body fat percentage as a decimal (23.6 percent becomes 0.236) equals the total number of pounds of fat she carries (157  $\times$  0.236 = 37 pounds of fat). Her total weight (157) minus her fat weight (37) equals her lean weight (120 pounds).

Mark would figure his lean weight the same way. His weight (200 pounds) times his body fat percentage as a decimal (22 percent becomes 0.22) equals the total pounds of fat he carries ( $200 \times 0.22 = 44$  pounds of fat). His total weight (200) minus his fat weight (44) equals his lean weight (156 pounds).

Knowing your lean body weight is important for two reasons: it's the basis for determining your daily protein requirement (which you'll do in Chapter 5), and it allows you to calculate a *realistic* goal weight for yourself. Even though we stress to our patients as we have to you that we don't care what you weigh as long as it's composed prop-

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WAIST N (IN INCH	<b>AINUS</b> ES)	WRIST		ន	22.5	23	23.5	24	24.5	25	25.5	50	26.5	27	27.5	58	28.5	\$	29.5	8	30.5	31
Weight	in Ibs.	120	••	4	9	80	0	12	14	16	18	20	21	23	25	27	29	31	33	35	37	39
		125		4	9	2	6	Ξ	13	15	17	19	20	22	24	26	28	30	32	33	35	37
		130		ო	5	7	თ	Ξ	12	14	16	18	20	2]	23	25	27	28	30	32	34	36
		135	••	ო	5	٢	8	2	12	13	15	17	19	20	22	24	26	27	29	ເຄ	32	34
		140	••	ო	5	9	8	2	Ξ	13	15	16	18	19	21	23	24	26	28	29	31	33
		145	••	ო	4	9	7	თ	Ξ	12	14	15	17	19	20	22	23	25	27	28	30	31
		150	••	2	4	9	2	ი	0[	12	13	15	16	18	19	2]	23	24	26	27	29	30
		155	••	2	4	5	9	80	0	Ξ	13	14	16	17	19	20	22	23	25	26	28	29
		160	••	7	4	5	9	œ	6		12	14	15	11	18	19	21	22	24	25	27	28
		165	••	2	e	5	9	80	6	0	12	13	15	16	17	19	20	22	23	24	26	27
		170	••	7	e	4	9	7	6	0	11	13	14	15	17	18	19	2]	22	24	25	26
		175	••	7	e	4	9	7	80	6	:	12	13	15	16	17	19	20	21	23	24	25
		180	••	~	e	4	5	2	80	6	0	12	13	14	91	17	18	19	21	22	23	25
		185	••	-	e	4	5	9	8	6	0	Ξ	13	14	15	16	18	61	20	21	23	24
		190	••	-	2	4	5	9	7	80	0	Ξ	12	13	15	16	17	8	19	21	22	23
		195	••	-	2	ო	5	9	7	8	6	Ξ	12	13	14	15	16	18	19	20	21	22
		200	••		2	3	4	9	7	8	თ	0	11	12	14	15	16	17	18	19	21	22

WAIST-MINUS-WRIST BODY FAT CALCULATION-MALE

WAIST MINU (IN INCHES)	S WR	ST		ส	22.5	33	23.5	24	24.5	55	25.5	8	26.5	5	27.5	<b>8</b>	28.5	&	29.5	8	30.5	31
Weight in Ibs.	30	 ي	• •	-	5	e	4	2	9	æ	თ	2	Ξ	12	13	14	15	17	18	19	20	21
	21	0		-	2	e	4	5	9	7	ø	ი	Ξ	12	13	14	15	16	17	18	19	21
	21	 م		-	2	e	4	5	9	2	æ	ი	0	Ξ	12	13	15	16	17	18	19	20
	22	Q		0	2	e	4	5	9	2	80	ი	2	Ξ	12	13	14	15	16	17	18	19
	22	 ເວ		0	-	2	e	4	9	7	æ	6	2	Ξ	12	13	14	15	16	17	18	19
	23	0		0	-	7	3	4	5	9	7	80	ი	2	Ξ	12	13	14	15	16	11	18
	23	 ي	-	0	-	2	3	4	5	9	٢	8	<b>0</b>	2	Ξ	12	13	14	15	16	17	18
	24	0	-	0	-	2	e	4	5	9	2	œ	6	2	Ξ	12	13	14	15	16	17	11
	24	 ب	-	0	-	5	в	4	5	9	2	œ	6	თ	2	Ξ	12	13	14	15	91	11
	25	0	-	0	-	2	3	4	5	9	9	٢	8	ი	6	Ξ	12	13	14	15	16	17
	25	 Q		0	_	2	e	e	4	5	9	2	80	თ	2	Ξ	12	13	14	14	15	16
	26	g		0	_	8	2	e	4	5	9	2	œ	ი	2	2	Ξ	12	13	14	15	16
	26	 ເດ		0	_		2	e	4	S	9	2	ø	8	თ	2	Ξ	12	13	14	15	15
	27	0	-	0	_	_	2	ო	4	2	9	2	7	80	6	6	Ξ	12	13	13	14	15
	27	ي. ي		0	0		8	ო	4	5	5	9	7	œ	Ġ	2	Ξ	Ξ	12	13	14	15
	28	0		0	0	-	5	ო	4	4	5	9	7	œ	თ	6	0	Ξ	12	13	14	14
	28	ŝ		0	0	-	7	e	4	4	5	9	7	8	80	6	0	Ξ	12	12	13	14
	29	2		0	0	_	7	e	<b>с</b>	4	5	9	7	2	80	6	0	Ξ	Π	12	13	4
	29	2		0	0		2	2	ო	4	5	9	9	7	8	6	0	2	Ξ	12	13	14
	8	9		0	0		2	2	e	4	ß	ß	9	2	8	ი	თ	9	1	12	12	13

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	38
	37.5
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MRIST HON-	35.5
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<b>VA</b> FAT	S
YOO	33.5

							BODY	FAT	CALC	NUS- NLAJU	NRIST NON-	W	ш								
WAIST MINUS (IN INCHES)	WRIST	··	31.5	32	32.5	ŝ	33.5	8	34.5	35	35.5	s	36.5	37	37.5	38	38.5	39	39.5	8	40.5
Weight in Ibs.	120		41	43	45	47	49	50	52	54	56	58	60	62	64	99	89	20	20	74	76
	125	••	39	41	43	45	46	48	50	52	54	56	58	59	61	63	65	67	69	7	72
	130	••	37	39	41	43	44	46	48	50	52	53	55	57	59	61	62	64	66	89	69
	135		36	38	39	41	43	44	46	48	50	51	53	55	56	58	60	62	63	89	67
	140	••	34	36	38	39	41	43	44	46	48	49	51	53	54	56	58	59	61	63	64
	145	••	33	35	36	38	39	4	43	44	46	47	49	51	52	54	55	57	59	80	62
	150	••	32	33	35	36	38	<b>4</b>	41	43	44	46	47	49	50	52	53	55	57	58	60
	155	••	31	32	34	35	37	38	40	41	43	44	46	47	49	50	52	53	55	56	58
	160	••	8	31	33	34	35	37	38	4	41	43	44	46	47	48	50	51	53	54	56
	165	••	29	30	31	33	34	36	37	38	40	41	43	44	45	47	48	50	51	52	54
	170	••	28	29	30	32	33	34	36	37	39	40	41	43	44	45	47	48	49	51	52
	175	••	27	28	29	31	32	33	35	36	37	39	40	4]	43	44	45	47	48	49	51
	180	••	26	27	28	30	31	32	34	35	36	37	39	40	41	43	44	45	47	48	49
	185	••	25	26	28	29	80	3]	33	34	35	36	38	39	40	4]	43	44	45	46	48
	190	••	24	26	27	28	29	8	32	33	34	35	37	38	39	40	41	43	44	45	46
	195	••	24	25	26	27	28	8	31	32	33	34	35	37	38	39	40	41	43	44	45
	200	••	23	24	25	26	28	29	8	31	32	33	35	36	37	38	39	4	41	43	44

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(IN INCHES)	WKISI		0.15	8	0.28	3	33.0	8	0.40	8	20.0 20.0	8	0.0 20.0	2	C./5	8	38.5	<b>}</b>	0.45	₹	40.0
Weight in Ibs.	205		22	23	25	26	27	28	29	30	31	32	34	35	36	37	38	39	40	41	43
	210	••	22	23	24	25	26	27	28	29	30	32	33	34	35	36	37	38	39	40	42
	215	••	21	22	23	24	25	26	28	29	8	33	32	33	34	35	36	37	38	39	40
	220	••	20	22	23	24	25	26	27	28	29	ဗ္ဂ	31	32	33	34	35	36	37	88	39
	225		20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
	230	••	19	20	21	22	23	24	25	26	27	28	30	31	32	33	34	35	36	37	38
	235		19	20	21	22	23	24	25	26	27	28	29	8	31	32	33	34	35	36	37
	240	••	18	19	20	21	22	23	24	25	26	27	28	29	80	3]	32	33	34	35	36
	245		18	19	20	21	22	23	24	25	26	27	27	28	29	8	31	32	33	34	35
	250		18	18	10	20	21	22	23	24	25	26	27	28	29	30	31	3]	32	33	34
	255		17	18	19	20	21	22	23	24	24	25	26	27	28	29	90	ອງ	32	33	34
	260		11	18	61	10	20	21	22	23	24	25	26	27	27	28	29	8	31	32	33
	265	••	16	17	18	19	20	21	22	22	23	24	25	26	27	28	29	29	80	ເຄ	32
	270	••	16	17	18	19	10	20	21	22	23	24	25	25	26	27	28	29	30	ເຄ	31
	275		16	16	17	18	19	20	21	22	22	23	24	25	26	27	27	28	29	ဗ္ဂ	31
	280		15	16	17	18	16	19	20	21	22	23	24	24	25	26	27	28	29	29	30
	285	••	15	16	17	17	18	10	20	21	21	22	23	24	25	26	26	27	28	29	30
	290		15	15	16	17	18	10	19	20	21	22	23	23	24	25	26	27	27	28	29
	295	••	14	15	16	11	17	8	19	20	21	2]	22	23	24	25	25	26	27	28	28
	300	••	14	15	16	16	17	18	19	19	20	2]	22	22	23	24	25	26	26	27	28

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WAIST MINUS (IN INCHES)	WRIST	••	4	41.5	ਖ਼	42.5	43	43.5	4	44.5	45	45.5	8	46.5	47	47.5	<b>4</b> 8	48.5	40	49.5	8
Weight in Ibs.	120		77	79	81	83	85	87	68	16	93	95	97	66	66	66	66	66	66	66	66
	125	••	74	76	78	80	82	84	85	87	80	16	<u>е</u>	95	96	<b>8</b> 6	66	66	66	66	66
	130	••	1	73	75	77	78	80	82	84	86	87	89	6	83	94	96	<b>8</b> 6	66	66	66
	135	••	68	70	72	74	75	17	79	80	82	84	86	87	68	6	92	94	96	98	66
	140		99	68	69	17	72	74	76	77	79	81	82	84	86	87	89	16	92	94	96
	145		63	65	67	68	2	1	73	75	76	78	79	81	83	84	86	87	80	91	92
	150	••	61	63	64	99	67	69	2	72	74	75	1	78	8	81	83	84	86	87	89
	155		59	61	62	64	65	67	88	70	1	73	74	76	11	79	8	82	83	85	86
	160	••	57	59	60	61	63	64	99	67	69	70	72	73	75	76	11	79	8	82	83
	165		55	57	58	09	61	62	64	65	67	68	69	71	72	74	75	76	78	79	81
	170	••	54	55	56	58	59	60	62	63	64	<u>66</u>	67	69	2	11	73	74	75	11	78
	175		52	53	55	56	57	59	8	61	83	64	65	99	68	69	20	72	73	74	76
	180	••	50	52	53	54	56	57	58	59	وا	62	83	65	99	67	68	70	1	72	74
	185		49	50	51	53	54	55	56	58	59	60	61	63	64	65	<u>66</u>	68	60	70	2
	190		48	49	50	51	52	54	55	56	57	58	8	61	62	63	65	99	67	68	69
	195	••	46	47	49	50	ี่อา	52	53	55	56	57	58	59	80	62	63	64	65	66	68
	200	••	45	46	47	48	50	51	52	53	54	55	57	58	59	60	61	62	63	65	99

WAIST-MINUS-WRIST BODY FAT CALCULATION-MALE

WAIST MINUS (IN INCHES)	WRIST		4	41.5	8	42.5	8	43.5	4	44.5	<del>R</del>	45.5	\$	46.5	4	47.5	8	48.5	8	49.5	8
Weight in Ibs.	205		44	45	46	47	48	49	51	52	53	54	55	56	57	58	09	61	62	63	64
	210	•••	43	44	45	46	47	48	49	50	51	53	54	55	56	57	58	59	80	61	62
	215	••	42	43	44	45	46	47	48	49	50	51	52	53	54	56	57	58	59	09	61
	220		41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
	225	••	40	41	42	43	44	45	46	47	48	49	20	51	52	53	54	55	56	57	58
	230	••	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57
	235		38	39	40	41	42	43	44	45	46	47	48	49	50	ย	5)	52	53	54	55
	240		37	38	39	40	4]	42	43	44	45	46	46	47	48	49	50	51	52	53	54
	245		36	37	38	39	4	41	42	43	44	44	45	46	47	48	49	50	51	52	53
	250		35	36	37	38	39	40	4]	42	43	44	4	45	46	47	48	49	50	51	52
	255		34	35	36	37	38	39	4	41	42	43	44	44	45	46	47	48	49	50	19
	260		34	35	35	36	37	38	39	<b>6</b>	4	42	43	43	44	45	46	47	48	49	50
	265		33	34	35	36	36	37	38	39	<del>6</del>	41	42	43	43	44	45	46	47	48	49
	270		32	33	34	35	36	37	37	38	39	40	4]	42	43	43	44	45	46	47	48
	275	••	32	32	33	34	35	36	37	38	38	39	40	4]	42	43	43	44	45	46	47
	280	••	31	32	33	33	34	35	36	37	38	38	39	40	41	42	43	43	44	45	46
	285		30	31	32	33	34	34	35	36	37	38	39	39	<b></b>	4]	42	43	43	44	45
	290	••	30	31	31	32	33	34	35	35	36	37	38	39	39	40	4]	42	43	43	44
	295		29	80	31	32	32	33	34	35	36	36	37	38	39	39	40	41	42	43	43
	300	••	29	29	8	31	32	33	33	34	35	36	36	37	38	39	39	40	41	42	43

#### 82 **PROTEIN POWER**

erly, if you're like most people, you have an "ideal" weight in your head that you'd like to reach and maintain. Based on how many pounds of lean body tissue you currently have, that may or may not be an attainable weight for you. If you have to sacrifice lean muscle weight to reach it, we encourage you to revise your goal. So what is a realistic "ideal" goal weight for you?