WEIGHT LOSS MATH

Excerpt from WEIGHT CONTROL – U.S. Edition by Vince Antonetti, PhD
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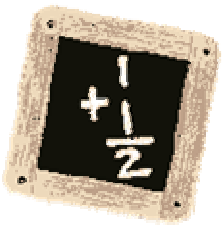

Weight control researchers have found that to lose one pound of body weight requires that we eat 3500 Calories less than we burn, creating what's called a calorie deficit. So if a person's total calorie deficit over time is known, their weight loss over time can be calculated.

Example 1: Assume a relatively inactive man eats about 2500 Calories a day and neither gains nor loses weight. Now suppose he goes on a 1500 Calorie per day diet.

His daily deficit would be 2500 - 1500 = 1000 Calories. In one week his deficit would be 1000 Calories per day x 7 days = 7000 Calories, and he should lose 7000/3500, or two pounds.

This computation technique, however useful, is somewhat crude. Primarily because the it does not account for a very important scientific fact: As we lose weight we actually need fewer calories to maintain our lower weight. As a result, if a dieter's calorie intake remains constant over some period of time, their calorie deficit will decrease during their diet and the rate at which they lose weight will also decrease with time. This effect becomes increasingly important with longer duration diets and as more weight is lost.

Only the Weight Loss Prediction tables found in WEIGHT CONTROL – U.S. Edition and TOTAL FITNESS – U.S. Edition (both published by NoPaperPress.com) account for this phenomenon. But before we proceed we need to discuss Activity Levels.

Activity Levels

As soon as we move about, the physical activity causes our energy output to increase significantly above our basal level.

Many experiments have determined the energy used during various activities. Scientists express the results in terms of calories used per pound of body weight per unit of time. To compute our total daily energy expended due to physical activity, therefore, would require that a diary be kept of the amount of time spent at each activity for an entire day. This is fine in a science lab, but in the real world it's impractical.

To overcome this problem, a number of years ago this writer devised a more practical measure of daily physical activity called the Activity-Level method. Essentially, to use the method, you make a judgment as to how active you are using Table 1. Admittedly, this has its own drawbacks but it's the most workable in practical, daily living situations.

Activity Level	Lifestyle	Description	Equivalent Walking Distance	Equivalent Pedometer Steps
0	Sedentary	Inactive most of day. Stands & walks very little during the day.	Less than 1 mile	Less than 2,100
1	Relatively Inactive	Seated most of day. Stands & walks at most four hours. Typical of office workers & similar occupations.	1 to 2 miles	2,100 to 4,200
2	Moderately Active	Stands as often as is seated. Typical of teachers, sales clerks, & similar jobs.	3 to 5 miles	6,300 to 10,500
3	Very Active	Stands & walks most of day. Typical of factory & construction workers, farmers, & similar jobs.	6 to 8 miles	12,600 to 16,800
4	Extremely Active	Very hard physical work. Typical of lumber jacks, athletes in training, etc.	More than 8 miles	More than 16,800

Table 1: Lifestyle Activity Levels

Weight Loss Prediction Tables

Scientists have long known that weight loss is a function of age, gender, height, weight, activity level, caloric intake and

the duration of the diet (or time on the diet). This writer related all these variables in a complex, scientifically based, energy-weight-control equation. The research was summarized in the paper, "The Equations Governing Weight Change in Human Beings" and published in the *American Journal of Clinical Nutrition.* WEIGHT CONTROL and TOTAL FITNESS contain a set of 60 Weight Loss Prediction Tables based on the afore-mentioned energy-weight-control-equation.

Using the Weight Loss Prediction Tables

First determine your Activity Level from Table 1. Then find the Weight Loss Prediction Table that applies to you (from among the 60 tables located in WEIGHT CONTROL and TOTAL FITNESS. The use of the Weight Loss Prediction Table to determine your specific diet calorie options is best illustrated by an example.

Example 2: A 28-year-old woman, who is 5' 3" and 160 lbs., is a computer programmer and spends most of her free time watching TV. How long will it take her to lose 20 pounds?

Considering her job and leisure-time pursuits, from Table 1 she decides on Activity Level 1. Next she consults her personal Weight Loss Prediction table (for women 18 to 35 yrs, 4' 11" to 5' 5", Activity Level 1) - a portion of the table is shown here as Table 2, on the next page.

To use Table 2, our dieter would scan the far left of the table and locate her weight loss goal of 20 pounds. She finds four different diet options of 900, 1200, 1500 and 1800 Calories. From this point, she runs a finger horizontally (to the right) until it intersects the vertical column headed by her present weight of 160 pounds. The four numbers in the highlighted box at the intersection are the time in days to lose 20 pounds, depending on the diet calories she consumes. Specifically, to lose 20 pounds our fictional female's diet calorie options are:

- **900 Calories per day for 55 days.**
- **1200 Calories per day for 70 days.**
- **1500 Calories per day for 96 days.**
- **1800 Calories per day for 154 days.**

WEIGHT LOSS PREDICTION FOR WOMEN Ages: 18 to 35 yrs.

Height: 4' 11" to 5' 5" Activity Level 1

Weight Loss	Diet Calories	Present Weight (lbs.)							
		110	120	130	140	160	180	200	220
5	900	19	17	16	15		11	10	9
5	1200	28	24	21	19		14	12	11
5	1500	49	39	32	28		18	15	13
5	1800	210	99	66	49		25	20	17
10	900	40	36	33	30		23	21	19
10	1200	58	50	44	40		29	25	23
10	1500	106	82	68	58		37	32	28
10	1800		234	145	106		52	42	35
15	900		55	51	46		36	32	29
15	1200		78	69	62		44	39	35
15	1500		132	107	91		57	49	42
15	1800			245	172		81	65	55
20	900		76	69	63	**55**	48	44	40
20	1200		108	95		**70**	60	53	47
20	1500		188	151		**96**	78	66	58
20	1800			380	252	**154**	113	89	74
30	900			109	100	86	75	67	61
30	1200			153	135	110	94	82	73
30	1500			257	209	155	124	104	90

Table 2. Weight Loss Prediction

Which alternative should she choose? Health professionals recommend a gradual weight loss of one to two pounds per week. The reason for the relatively slow weight loss is that you want to be on the diet long enough to understand and learn how much to eat, and how to eat properly. In this case, at two pounds per week her diet should last 10 weeks or 70 days, and at one pound per week her diet should take 20 weeks or 140 days.

To comply with accepted weight loss guidelines, therefore, she should choose a diet calorie level that will result in her losing the 20 pounds over a 70 to 140 day period – pointing to the 1200 or 1500-Calorie options. In the end, it comes down to her

deciding between the shorter term 1200-Calorie diet or a longer duration somewhat higher 1500-Calorie option.

Exercise and Lose Weight Faster

Better still would be for this woman to increase her activity level by taking a brisk three-mile walk everyday, and qualifying for Activity Level 2, the moderately active category. The weight loss prediction table for this case is not shown here but would result in the following shorter-duration diet options:

- **900 Calories per day for 47 days.**
- **1200 Calories per day for 57 days.**
- **1500 Calories per day for 74 days.**
- **1800 Calories per day for 104 days.**

Hence, by increasing her activity level, our dieter could decrease the time to lose the 20 pounds by 14 to 32 percent – depending on the diet-calorie level she chooses.

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