

## OBJECTIVE I

### **Achieving and Maintaining An Optimal Body Weight By Means of A Calorically Restricted, Nutrient-dense Diet.**

This application is both a Phase I and, possibly, a Phase II Life-Extension Modality. Note: these recommendations may not apply to certain categories of people (e.g., pregnant or lactating females, infants, children during the early development, competition athletes, those who are under medical treatment, and perhaps others). For our purposes here, we will be narrowing our focus mostly to mature people who are age 25 and above and who are reasonably healthy.

In the Applications Section, you will be asked to estimate your optimal body weight and to compare it with your actual weight. Depending on that comparison, one of three strategies will apply to you.

1 - If your body weight is stable and is fairly close to the optimum value (i.e., not more than 2 pounds below or 7 pounds above your optimal weight), then the procedures which we will recommend may not necessarily apply to you. If the control of your body weight is due to your nutritional practices, then you are to be highly complimented because you have already accomplished one of the most significant and difficult to achieve, life-extension objectives. If the control of your weight is due to your genetics, then you are fortunate. Even if you do not need to, you may still wish to do the procedures in Objective I for the purpose of refining your nutritional practices.

2 - If you are more than 3 pounds below your optimum weight, then it is advised that you have a medical examination to determine whether or not there may be any sub-clinical disorder(s), including a mal-absorption syndrome. In the Testing & Evaluation System, that kind of a determination can be made, at least in part; but additional diagnostic testing may also be necessary. Ruling out a sub-clinical disorder, the low body weight may simply be due to genetics and early development or under eating, and you should follow the procedures for evaluating your caloric intake vis a vis body weight to make that determination. To increase your weight, you will have to experiment with increasing calories, doing body building exercise, increasing the assimilation of nutrients, and, perhaps, hormonal administration under medical supervision. Because the need to increase body weight applies to only a small percentage of people and is a much more individualized therapeutic process, we will not be recommending specific procedures here.

3 - If you are above optimal weight, like the majority of mature people (particularly those over 35), then what is required will be a lowering of your body weight, and most of the instructional material will be directed to this group.

If you are over-weight, then the first objective is to reduce the percentage of body fat to the point at which your weight is close to its optimum, and the second objective is to keep it there. Lowering the body weight is difficult, and maintaining it at a low level is also a challenge. Most people will go up and down for a period of years and then eventually will develop a life-style that will keep the weight under control without too much effort.

In terms of how to lower your body weight to its optimum, there are many different plans, most of which will work fairly well if a person stays with them. Many of the plans claim some special element which burns off the fat and/or inhibits the desire to eat, thus making it quick and easy; and such claims can be helpful, psychologically, in creating an initial mind-set that is conducive to beginning a weight-loss program. However, within a week or two, usually after the initial rapid loss of the weight which can be attributed mostly to excess body water, a person hits the hard and difficult reality of consuming body fat in order to lose weight. Then, at that point, those who depended too much on the exaggerated claims of a "quick and easy" weight loss can become quickly and easily discouraged, and they usually quit.

All weight loss programs are difficult because the one element which they all must have in common, in order to be effective, is that they must bring the total consumption of calories below what the body needs in order to maintain its lean body mass (i.e., its protein structures); and therefore, the body uses its own stored fat to compensate for the energy deficit. In other words, you must starve your body in a controlled fashion, and that is not, nor can it ever be, "easy". Further, keep in mind that a pound of body fat contains sufficient calories to provide almost 2 full days of energy; thus, one could eat absolutely nothing and still lose only 3 to 7 pounds of body fat per week; and that is not "quick". Therefore, weight loss is always difficult and slow. So, do not be discouraged!

In our procedures, we will rely mostly on using the Diet History & Food Table which is part of The Uniform Testing & Evaluation System. Much of the effort will be placed in learning how to fill out a diet history and complying with that process. If you keep in mind your desired objective in terms of your caloric intake per day, and if you do good "bookkeeping" on your food consumption, then eventually you will gain, almost unconsciously, control of your eating behaviour. However, keep in mind also that no procedure will do it for you; it is always you who must make the procedure work.

To lose weight safely, we recommend the following:

- 1 - a diet that has total calories of 800-1,000 in order to cause the body to use its own stored fat for energy;
- 2 - take a full-spectrum vitamin and mineral compound to insure against deficiencies while on a restricted diet;

3 - select most of your foods from the categories of legumes, grains & cereals, fruits, and vegetables to provide a diet that is low in caloric density and high in bulk to help inhibit appetite.

4 - keep to a minimum your consumption of meats, dairy products, nuts, fats, oils, and sugars to avoid high caloric foods;

5 - monitor your body weight to see how effective your self-devised plan is for accomplishing the desired weight loss, and;

6 - do some form of routine physical exercise to help inhibit appetite and use more calories.

Within those general guidelines, how an individual applies the particulars does not matter that much. Of the above applications, numbers 1 through 5 can be performed by using the Diet History. Simply, record your food consumption as you go through the day, try to avoid the foods which are high in calories, keep a running total of the calories which you have eaten, and plan your up-coming meals and snacks in such a way that your total calories at the end of the day do not exceed 1,000. If you are not able to do the procedures on your own, then you may need to be managed by a counselor; and if you are still unable to do the procedures and are significantly over-weight, then you may need to be placed in a controlled, clinical environment where the desired behavioural patterns can be "programmed". Keep in mind that food is a chemical and is like a drug in certain respects. In some people, food consumption can be an addiction which is as bad as or worse than a drug addiction. If your consumption is at the 800 calorie limit and if you are not losing weight, then more severe restriction might be required or hormonal supplementation necessary; however, unless you are experienced in this area, we do not recommend that you do severe restriction for any length of time without a diagnostic evaluation and some medical supervision during the first month or so.

We will provide several diets which total about 1,000 calories. You may use them literally or as guidelines. Remember that, for all practical purposes, when reducing weight, you can arrange the foods in any way you desire as long as the total calories are 800 - 1,000.

In terms of maintaining an optimal body weight, the beneficial effects of a nutritionally adequate, low calorie diet on general health, disease prevention, and the extension of the life-span has been observed for many years. In numerous studies, beginning in the 1930's and continuing to be replicated on into the present, those observations have been substantiated by both experimental testing in animals and good epidemiological studies in human populations. Reference is made to the scientific work which is cited in the Handbook of The Biology of Aging <sup>1</sup> and to the works of McKay <sup>2</sup>, Ross <sup>3</sup>, Tannenbaum <sup>4</sup>, and, more recently, Walford and Weindruch<sup>5, 6</sup>.

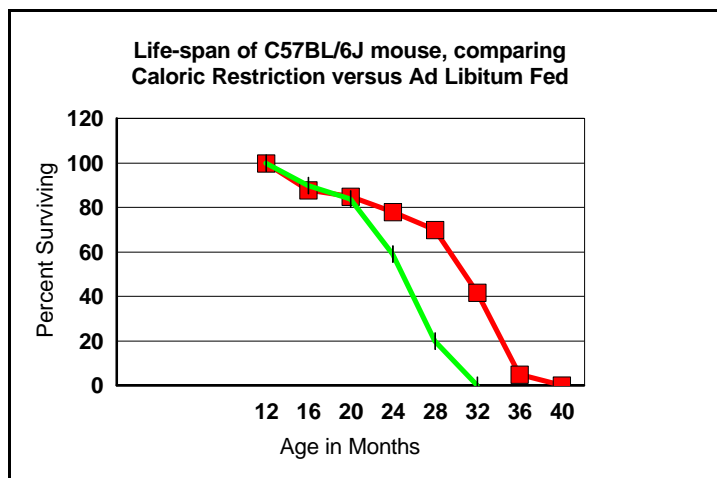
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<sup>1</sup> Barrows Jr. CH and Roeder LM, 1977; Nutrition; in Handbook of the Biology of Aging, (Eds. Finch & Hayflick) pgs. 561-581, 1977.

The evidence supports, with a high confidence factor, the assertion that a routine diet which is moderately restricted in calories and which keeps the body weight close to its optimum, will:

- 1 - significantly lengthen the health portion of the life-expectancy, perhaps by about 20%;
- 2 - lower the personal risk to heart disease, stroke, cancer, kidney disease, and most other diseases which are associated with ageing; and
- 3 - enhance the general level of health and well-being.

The data in the graph which follows support the assertion that caloric restriction slows ageing<sup>7</sup>.



<sup>2</sup> McKay CM, Crowell MF, and Maynard LA, 1935; The Effect Of Retarded Growth Upon The Length Of Life Span And Upon The Ultimate Body Size; Journal of Nutrition, vol.10, pgs.36-43, 1935. Also, McKay CM, 1956; Experimental Prolongation Of The Life Span; New York Academy of Medicine vol.32, pgs.91-101, 1956.

<sup>3</sup> Ross MH, 1972; Length Of Life And Caloric Intake; American Journal of Clinical Nutrition, vol.25, pgs.834-838, 1972. Also, Ross MH and Garrit B, 1965; Tumor Incidence Patterns And Nutrition In The Rat; Journal of Nutrition, vol.87, pgs.245-260, 1965.

<sup>4</sup> Tannenbaum A, 1947; Effects Of Varying Caloric Intake Upon Tumor Incidence And Tumor Growth; Annals of the New York Academy of Science, vol.49, pgs.5-18, 1947.

<sup>5</sup> Walford R, 1984; Maximum Life Span.

<sup>6</sup> Weindruch R and Walford RL, 1988; The Retardation of Aging and Disease by Dietary Restriction; pub. Charles Thomas.

<sup>7</sup> Weindruch R and Walford RL, 1982; Dietary Restriction in Mice Beginning at 1 year of Age: Effect of Life-Span and Spontaneous Cancer Incidence; Science vol.215, 12 March 1982, pg1415-1418.

The experimental mice received about 60% of the caloric of that of the *ad libitum* fed animals (i.e., 40% less what they would have consumed normally). The concomitant effect was an increased mean life-span of 25% and an increased maximum life-span of 25%. It is important to note that the caloric restriction was initiated at 12 months of age, which, in human terms, would be comparable to 26 years of age. Further, there was a significant reduction in tumor incidence in the calorically restricted group. The benefit of caloric restriction in terms of increased mean and maximum life-span and a lower incidence or delayed onset of chronic diseases has been reproduced in numerous experiments since it was first observed in the 1930 by McKay, and the phenomenon applies to virtually all species.

It must be noted that in the calorically restricted experiments, the animals are maintained for the entire life time in a low stress, optimal environment, with variables kept to a minimum. This enables a rather severe degree of restriction of about 40%, which is not advised in humans. Rather, the advisability and extent of caloric restriction for a particular individual depends mostly on one's optimal weight in relationship to one's actual weight.

Finding your optimal body weight will be, in some measure, a matter of your own process of trial and error. There is a degree of individual variation which depends on such factors as: genetics, frame structure, activity level, sex, and age. Making an estimate of your optimal body weight can be as simple a procedure as looking at yourself in the mirror and judging whether or not you are fairly lean with only a modest amount of surplus fat. Also, there are tables of optimal body weights according to sex and height, and we will use them later in making your calculation. Although body weight is what we will be observing mostly, what we are really concerned with is the percentage of your total body weight in the form of fat, which for males should be from about 14-18% <sup>8</sup> and for females should be about 25-30% <sup>9</sup>. There are complex analytical techniques for measuring body fat such as: measuring the skinfold thicknesses <sup>10</sup>, water immersion weighing, or electrical conductivity techniques <sup>11</sup>. However, a general formula for estimating the percentage of your body fat should be adequate for most purposes, and we will be explaining that later.

The specific procedures for optimizing body weight are provided in the Applications Section.

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<sup>8</sup> Adapted from Fryer JH, 1962; Studies Of Body Composition In Men Aged 60 And Over; in Biological Aspects of Aging (Ed. N.Shock) pgs. 59-78, 1962.

<sup>9</sup> Calloway NO & Dollevoet PL, 1977; Selected Tabular Material On Aging; in: Handbook of The Biology of Aging (Eds. Finch & Hayflick), 1977, pg.683.

<sup>10</sup> Keys A and Brozek J, 1953; Body Fat In Adult Man; Phys. Rev., vol.33, pgs.245-325, 1953.

<sup>11</sup> Lukaski, Henry C et al., 1985; Assessment Of Fat-Free Mass Using Bioelectrical Impedance Measurements Of The Human Body; American Journal of Clinical Nutrition, 1985, vol.41, pgs.810-817.

## **OBJECTIVE II - THE SUPPLEMENTATION OF ESSENTIAL NUTRIENTS**

Next, we will discuss the general principles of the second objective in our basic approach to nutrition, which is the supplementation of essential nutrients.

Chronic deficiencies in any one or more essential nutrients (i.e., vitamins, minerals, or amino acids) will cause and/or increase the susceptibility to disease and shorten the life-span. That is such a well established fact that there should be absolutely no controversy on that point and no need for documenting the proof. Because we are recommending a restricted diet, as a routine that should be integrated into one's general life-style, it is almost certain that the diet will periodically, and perhaps chronically, not be sufficient in essential nutrients. To design a restricted diet that is abundant in essential nutrients is probably impossible and would be very impractical to apply. Therefore, it is simply easier, safer, and more cost effective to supplement the diet with the essential nutrients.

Many people have studied the nutritional literature and have attempted to design either one ideal supplemental formula for all people or a system of formulations which can be tailored to a specific individual. Both approaches are somewhat fallacious. First, by virtue of the principle of "biochemical individuality", as discussed previously, it is impossible that one formula can be ideal for all people, each of whom is a unique metabolic entity, existing in a unique set of circumstances. Second, because of the many self-regulatory, control mechanisms which the body has for adjusting to variations and maintaining its homeostasis, it is actually not necessary to devise a specialized formula for a particular person. All that is necessary is to supply a generally adequate, but not very excessive, supply of the essential nutrients, and the body will tend to preserve what it needs and eliminate what is superfluous. Very excessive amounts of supplemental nutrients (unless for the treatment of a medical condition or an elevated disease risk) is not advised for life-extension and health purposes because over supplementation may evoke compensatory metabolic reactions that might place a chronic stress on the body.

The specific recommendations for supplementation are provided in the applications section and in a separate section entitled Supplementation - nutrients and pharmaceuticals.

## **OBJECTIVE III - THE PROPER DISTRIBUTION OF FOOD GROUPS**

The third nutritional procedure which will be generally recommended for life-extension, health maintenance, and disease prevention is the proper distribution of total calories in terms of food groups. For a long time, nutritionists recommended a "balanced" diet, which meant a diet that included portions from all food groups. (Reference is made to the Diet History & Food Table in the Uniform Testing & Evaluation Section for the basic food groups which are: Meats, Dairy Products, Nuts & Legumes, Grains & Cereals, Fruits, and Vegetables). The idea of the "balanced" diet is still basically sound, and it attempts to insure that there are no deficiencies in essential nutrients and no excess of any particular types of foods. The balanced diet also helps

avoid food toxicity and allergies by rotating the foods so that the exposure to a particular food that is toxic is minimized.

In more recent years, a fairly strong consensus has been forming among nutritional scientists which believes that the best routine diet is one which is relatively high in complex carbohydrates, has a good amount of fiber, is relatively low in fats, and has a modest amount of protein<sup>12</sup>. Such a diet, it is believed, is appropriate for mature and older individuals in particular<sup>13</sup>. The optimal diet would contain: 10-25% of its calories in fats, about 20-25% of its calories in protein, 50-60% of its calories from complex carbohydrates, about 30g. of fiber, a good portion of fruits and vegetables that are rich in vitamin A and vegetables coming from the cruciferous (i.e., cabbage) family. The scientific basis for this position is also fairly sound and centers around the observations that low-fat, high-complex-carbohydrate, and high fiber diets help to prevent obesity and are effective in preventing and treating such diseases as: coronary artery disease<sup>14 15 16 17 18</sup>, cancer<sup>19</sup>, diabetes<sup>20</sup>, high blood pressure<sup>21</sup>, and possibly other common diseases.

However, there are some controversial points which are worthwhile observing. In those clinical studies where people are placed on a low-fat, high-complex-carbohydrate diet, the diet is also usually restricted in its total calories and is frequently combined with a program of physical exercise; therefore, the beneficial effects might easily be attributed largely to caloric restriction

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<sup>12</sup> Pritikin N, 1982; Optimal dietary recommendations: a public health responsibility; *Prev. Med.*, Nov.1982, 11 (6) pgs.733-9.

<sup>13</sup> Weber F, 1983; Effects of a high-complex-carbohydrate, low-fat diet and daily exercise on individuals 70 years of age and older; *J. Gerontology*, Mar 1983, 38 (2), pgs.155-61.

<sup>14</sup> Brown WV and Karmally W, 1985; Coronary heart disease and the consumption of diets high in wheat and other grains; *Am. J. Clin. Nutr.*, May 1985, 41 (5 Suppl) pgs.1163-7.

<sup>15</sup> Garcia-Palmieri MR, et al. 1980; Relationship of dietary intake to subsequent coronary heart disease incidence: the puerto rico heart health program; *Am. J. Clin. Nutr.*, Aug 1980, 33 (8) pgs.1818-27.

<sup>16</sup> Ribeiro JP, et al. 1984; The effectiveness of a low lipid diet and exercise in the management of coronary artery disease; *Am. Heart J.*, Nov 1984, 108 (5) p1183-9.

<sup>17</sup> Snook JT, et al., 1985; Effect of moderate to very low fat defined formula diets on serum lipids in healthy subjects; *Lipids*, Nov 1985, 20 (11), pgs.808-16.

<sup>18</sup> Rosenthal MB, 1985, et al.; Effects of a high-complex-carbohydrate, low-fat, low-cholesterol diet on levels of serum lipids and estradiol; *Am. J. Med.*, Jan 1985, 78 (1) pgs.23-7.

<sup>19</sup> Wynder EL, 1985; Large bowel cancer: prospects for control; *Cancer. Detect. Prev.*, 1985, 8 (3) pgs.413-20.

<sup>20</sup> Barnard RJ, et al.; Response of non-insulin-dependent diabetic patients to an intensive program of diet and exercise; *Diabetes Care*, Jul-Aug 1982, 5 (4), pgs 370-4.

<sup>21</sup> Hodges RE and Rebello T, 1985; Dietary changes and their possible effect on blood pressure; *Am. J. Clin. Nutr.*, May 1985, 41 (5 Suppl) pgs.1155-6.

and physical exercise rather than the percentages of fats and complex-carbohydrates. In support of that interpretation, in animal studies, some of the greatest life-extension has been achieved by Morris Ross at the Institute for Cancer Research, who used calorically restricted diets which were extremely high (34% of the total calories) in the form of a simple-carbohydrate (i.e., sugar or sucrose)<sup>22</sup>. Also, Ross reported that, in animal experiments, wide variations in protein concentrations can be made without apparent detrimental effect on health or life-span<sup>23</sup>. Thus, we see the wide ranges of variations to which the body can metabolically adjust as long as it is not over-burdened by excessive total calories.

In an effort to take advantage of both schools of thought about an optimum routine diet (the balanced diet and the low-fat, high-complex-carbohydrate diet), our recommendations about food group distribution will incorporate the two. Keep in mind, however, that restriction in total calories (Objective I) plus supplementation (Objective II) are the primary regimens to be emphasized. If you are on a calorically restricted diet that is adequately supplemented, then the distribution of food groups is probably not that significant; however, if you are not on a restricted diet, then it can be very important.

#### **OBJECTIVE IV - INDIVIDUAL NUTRITIONAL PROFILING**

In this last category of recommendations, we will be dealing with a wide variety of individual variables in relationship to nutrition. Depending on the signs and symptoms and other data in the Testing & Evaluation System, routines may be recommended which evaluate food allergies, conditions of mal-absorption, and other special conditions which appear to be relevant to the health of a particular individual. Because these applications are highly individual, standardized recommendations will not be made here in the manual, but only the general guidelines will be provided, with specifics left to the physician's or counselor's analysis.

Having reviewed the four categories of nutritional recommendations, we will now discuss their applications in terms of actual procedures.

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<sup>22</sup> Reported in: Life span extensions; by Robert Parker, Foundation Document, 1977, pg.5.  
See also, M.H.Ross, Amer. J. Clin. Nutrition, 1972, 25, pgs. 834-838.

<sup>23</sup> Private discussion with C.A. Everone