Good nutritional status is critical to good athletic performance, even though the two factors that most influence performance are genetic endowment and state of training. Nutrition assessment involves the evaluation of nutritional status through measurement of food and nutrient intake and appraisal of nutrition-related health indicators. This paper explains the major aspects of the nutritional assessment process for athletes:

- Diet history; nutrient intake analysis including determination of energy needs; anthropometric measurements; and physical exam.

### The Nutritional Assessment Process

**Diet History**

Techniques in measuring diet include (a) 24-hour recall, (b) food frequency checklist, (c) food records (diet diary), and (d) direct observation. Table 1 briefly describes each method and its strengths and limitations.

Part of the client interview should include any history of drug use, including medical (prescription and over-the-counter) and recreational (illicit drugs, alcohol) drug use. Drug-diet interactions should be assessed. For example, chronic aspirin use can cause gastrointestinal bleeding and induce iron deficiency anemia. Use of amphetamines and certain antidepressants suppresses appetite. Chronic antacid use may cause constipation and interfere with nutrient absorption.

Perhaps even more crucial is assessing the use of nutrient supplements as ergogenic aids. Athletes whose main motivation is to compete are generally more likely to use ergogenic aids. Widespread use by athletes of various nutritional products such as vitamins, minerals, sports drinks, and protein has been documented (Haymes, 1991; Massad et al., 1995).

Though exercise may increase the need for some nutrients, most scientific studies have found that increased needs can be met through a balanced diet. Even certain deficiencies, which are more common in specific groups of athletes (e.g., iron deficiency anemia in long-distance runners), can be corrected by proper diet. Many supplements can be toxic when taken in high doses.

**Nutrient Intake Analysis**

The simplest way to analyze nutrient intake is by comparing the reported intake with the recommendations listed on the USDA Food Guide Pyramid. For instance, the recommended number of grains is 6 to 11 servings per day. Simply comparing the diet record with the recommended number of servings would estimate whether the nutrients in that food group are provided by the diet.

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Table 1. Methods for Obtaining Diet History

<table>
<thead>
<tr>
<th>Method</th>
<th>Strengths</th>
<th>Limitations</th>
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<tbody>
<tr>
<td>24-hr recall: recording what was eaten for 1 day</td>
<td>Quick, easy to obtain</td>
<td>Seldom representative of typical eating pattern</td>
</tr>
<tr>
<td>Food frequency checklist: checking off, from a given list, how often and how much certain foods are eaten</td>
<td>Can be self-administered, may be more representative of usual food intake than a few days of diet recall</td>
<td>Food list may not include certain foods not considered mainstream; data can be compromised when multiple foods are grouped as a single listing; can be tedious to fill out</td>
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<tr>
<td>Food diary: recording all foods and beverages consumed, and the amounts; 7 days is typical</td>
<td>Provides more accurate representation of typical diet if recording is concise</td>
<td>May get monotonous, individuals soon lose interest, underreporting is common</td>
</tr>
<tr>
<td>Direct observation: seeing and recording what the individual has eaten</td>
<td>No need to rely on written reports; usually done in hospital or other in-patient setting</td>
<td>Not usually feasible in other settings</td>
</tr>
</tbody>
</table>

More detailed diet analysis is typically done with a computer program. Most diet analysis software programs provide nutrient values of common foods and are based on the USDA Nutrient Database for Standard Reference, which contains data on 6,000 foods. It is provided by the Nutrient Data Laboratory of the Agricultural Research Service (USDA-ARC) at the Human Nutrition Research Center in Beltsville, MD. This information can be examined on the Internet:

URL: http://www.nal.usda.gov/fnic/foodcomp

Data sets prepared by USDA-ARS's Nutrient Data Laboratory can be downloaded to your computer and used in your programs. Since there are literally hundreds of diet analysis software packages to choose from, selection should be based on the intended use. If the intention of diet assessment is to compare nutrient intakes with the recommended dietary allowances (RDA), any program that provides data on these nutrients should suffice. RDAs are set for (a) energy (calories); (b) protein; (c) vitamins A, D, E, K, C, thiamin, riboflavin, niacin, B-6, folate, B-12; and (d) the minerals calcium, phosphorous, magnesium, iron, zinc, iodine, and selenium. Estimated minimum requirements are set for sodium, potassium, and chloride.

The nutrient recommendations were not intended to assess nutrient needs for conditions such as major illness, recovery, or excessive exercise. Nutrient requirements for athletes vary depending on the type of sport in which they participate. For instance, strength and endurance athletes may require more protein, but the increased need may still be met through a balanced diet with a small amount of extra protein sources. It is important to note that nutritional products sold as ergogenic aids are often taken in doses that far exceed the RDA.

The total number of food items included in the database is large enough so that substitution is kept to a minimum. If the intended use of a program is to produce a nutrient intake profile that can be easily understood by the layperson, then a program that has the USDA handbook data and information on how the major nutrients are met by the diet is sufficient. Desirable features include the following:

- Data entry is simple and allows you to enter foods in common measurements (cup, oz, teaspoon).
- It can compare the athlete’s intake against recommended standards.
- It allows you to analyze for many nutrients and nutrient factors.
- It includes fitness and weight management information.
- It creates personalized profiles by age, weight, height, gender, and activity level.
- You can enter recommendations for weight gain or loss, and calories are recalculated by the program.