CALCULATING PROTEIN REQUIREMENTS PER ACTIVITY AND GOAL TYPES

Calculate your client’s ideal protein intake
Introduction

Here is what you will learn in this unit:

- Is your client getting enough protein?
- How much protein does your client need?
- How to calculate your client’s ideal protein intake based on their fitness goals

Includes the following downloadable client materials for immediate use with your client:

- Protein Requirements per Activity Type
- Ideal Protein Intake Calculator per Goal Type
- Good Food Sources of Protein
- Protein Meal Planner
How much protein?

Depending on your client’s goals, there are different protein requirements!

- **A sedentary** person requires **0.75 g protein per kg of body weight daily**.

- **At low-moderate exercise intensities** (< 50% VO2max), there is no significant increase in protein requirements (Hargreaves & Snow, 2001).

- **For higher intensities**, the protein requirements are greater. Most experts recommend an intake in the range **1.2-1.8 g/ kg BW/ day** (IOC, 2011; ACSM/ADA/DC, 2009; Phillips and Van Loon, 2011; IAAF, 2007). That’s equivalent to 84-126 g daily for a 70 kg person.

- **For endurance training**, most studies recommend an intake at the lower end of the range, around **1.2-1.4 g/ kg body weight/ day** (ACSM/ADA/DC, 2009; Phillips et al., 2007; Tipton et al., 2007; Lemon, 1998; Williams & Devlin, 1992; Williams, 1998; ACSM, 2000).
  - So, for example, a **distance runner** weighing 70 kg would need **84-98 g/ day**.

- **For strength and power training** demands a greater daily requirement for protein than endurance training, with researchers recommending an intake at the higher end of the range: between **1.4 and 1.8 g/ kg body weight/ day** (Phillips et al., 2007; Tipton et al., 2007; Lemon et al., 1992; Williams, 1998; Tarnopolsky et al., 1992).
  - So, for example, a **sprinter** or **bodybuilder** with the same body weight would need **98-126 g/ day**.
Is your client getting enough protein?

- If your client is meeting their calorie needs from a wide variety of foods, they are likely to be getting enough protein.

- Dietary surveys show that most athletes and regular exercisers already consume diets providing protein intakes above the maximum recommended level without the use of protein supplements!

- If your client severely reduces their calorie intake or cut out entire food groups (for example, a vegan diet or a dairy allergy), they may find it more difficult to meet their protein needs.

- An adequate calorie intake is important for promoting protein balance and increasing protein retention in the body.

REMEMBER!! Animal sources are considered “complete proteins” and provide higher levels of essential amino acids, but some foods (such as red meat and cheese) are high in saturated fat. Advise your client to keep these to a minimum and choose lean and low-fat versions instead!

In the next pages, you will learn how to calculate your client’s exact protein requirements, and what food sources contain protein.
Calculating protein intake per goal type
How to calculate ideal protein intake

**STEP 1**
Identify your client’s fitness goal. Needs to:
- Promote endurance?
- Promote strength and power?
- Lose (fat) weight?
- Gain (muscle) weight?

Use the **Protein Requirements per Activity Type** to identify your client’s ideal protein intake to achieve their goal.

**STEP 2**
Complete the **Protein Intake Calculator per Goal Type** sheet and use this as a guide for your client’s ideal daily protein intake.

This will be a range of total protein grams daily.

Your client’s ideal protein intake should be evenly distributed between meals.

**STEP 3**
Use the **Good Food Sources of Protein** sheet to select the preferred foods for each meal, including those for the post-exercise recovery window.

List 3 options for each meal in the **Protein Meal Planner**:
- Breakfast?
- Lunch?
- Dinner?
- Snacks?
- Post-exercise?
Protein Requirements per Activity Type

Examine the table below which summarises the daily protein requirements for different types of exercisers and fitness goals:

<table>
<thead>
<tr>
<th>Activity Type</th>
<th>Ideal Daily Protein Intake (grams) per kg of body weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sedentary person or low intensity activity</td>
<td>0.75</td>
</tr>
<tr>
<td>Endurance training (moderate or heavy training)</td>
<td>1.2 to 1.4</td>
</tr>
<tr>
<td>Strength and power training</td>
<td>1.4 to 1.8</td>
</tr>
<tr>
<td>Exerciser on a weight (fat) loss programme</td>
<td>1.6 to 2</td>
</tr>
<tr>
<td>Exerciser on a weight (muscle) gain programme</td>
<td>1.8 to 2</td>
</tr>
</tbody>
</table>

Source: IOC, ACSM/ADA/DC, Williams & Devlin, 1992; Lemon et al., 1992; Williams, 1998; Tarnopolsky et al., 1992
You can estimate your client’s protein requirements from their body weight (kg) using the guidelines in the previous page.

Now, look at the following examples:

(a) **For endurance exercisers** (marathon runner, cyclist, triathlete, long distance or open water swimmer, cross country skier, race walker) **weighing 70 kg**:

\[
70 \times 1.2 = 84 \text{ g} \\
70 \times 1.4 = 98 \text{ g} \\
\text{Protein requirement = between 84-98 g/day}
\]

(b) **For strength and power exercisers** (weightlifter, powerlifter, sprint runner, sprint swimmer, sprint cyclist, wrestler, rugby player, hockey player, basketball player, rower, track and field athlete) **weighing 70 kg**:

\[
70 \times 1.4 = 98 \text{ g} \\
70 \times 1.8 = 126 \text{ g} \\
\text{Protein requirement = between 98-126 g/day}
\]

Use the **Protein Intake Calculator per Goal Type** (next page) as a basis to develop your client’s complete nutritional plan!
Protein Intake Calculator per Goal Type

Print and use this worksheet to plan your client’s ideal protein intake (give it to your client and remember to keep a copy in your files!):

Client Name: ____________________________________________ Date: __ / __ / __

1. Body Weight (BW) in kilograms: ______ kg

2. Fitness goal (check the applicable box):
   - Endurance (moderate/heavy) training: From 1.2 to 1.4 g protein per kg BW a day
   - Power and strength training: From 1.4 to 1.8 g protein per kg BW a day
   - Weight (fat) loss programme: From 1.6 to 2 g protein per kg BW a day
   - Weight (muscle) gain programme: From 1.8 to 2 g protein per kg BW a day

3. Write down the recommended protein intake per guideline table above:
   From _____ to _____ grams of protein per kg of body weight daily

4. Multiply the body weight by each recommended intake number:
   From _____ kg x _____ g = _____ g of protein a day
   To _____ kg x _____ g = _____ g of protein a day

5. Ideal protein intake is between _____ g to _____ g daily
What foods to chose?

**STEP 1.** Look at the Good Food Sources of Protein table in the next page and select the preferred foods for each meal: breakfast, lunch, dinner and snacks, including those for the post-exercise recovery window.

**STEP 2.** List 3 options for each meal (this would depend on a person’s taste or palate):

- **Breakfast?**
  1. ____________________  2. ____________________  3. ____________________

- **Lunch?**
  1. ____________________  2. ____________________  3. ____________________

- **Dinner?**
  1. ____________________  2. ____________________  3. ____________________

- **Snacks?**
  1. ____________________  2. ____________________  3. ____________________

- **Post-exercise?**
  1. ____________________  2. ____________________  3. ____________________

**STEP 3.** Now calculate the portion size and number of portions for each protein meal selected. Make sure to match the ideal daily protein intake numbers from the Protein Intake Calculator per Goal Type. Protein powder, shakes and bars and meal replacement products should also be counted towards the protein target.

**STEP 4.** Finally, complete the Protein Meal Planner worksheet with all of the above information.

Source: The Health Sciences Academy
Use this table to select the preferred foods for each meal, including those for the post-exercise recovery window.

List 3 options for each meal:
- Breakfast?
- Lunch?
- Dinner?
- Snacks?
- Post-exercise?

The sum of protein grams in meals should match the ideal daily protein intake.

Revisit the calories and carbohydrate intake planners as a basis for developing your client’s personalised nutritional programme.

<table>
<thead>
<tr>
<th>Food</th>
<th>Portion size</th>
<th>Protein (g)</th>
<th>Kcal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MEAT/FISH</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beef, fillet steak, grilled, lean</td>
<td>2 slices (105 g)</td>
<td>31</td>
<td>197</td>
</tr>
<tr>
<td>Chicken breast, grilled meat only</td>
<td>1 breast (130 g)</td>
<td>39</td>
<td>191</td>
</tr>
<tr>
<td>Turkey, light meat, roasted</td>
<td>2 slices (140 g)</td>
<td>47</td>
<td>214</td>
</tr>
<tr>
<td>Cod, poached</td>
<td>1 fillet (120 g)</td>
<td>25</td>
<td>113</td>
</tr>
<tr>
<td>Mackerel, grilled</td>
<td>1 fillet (150 g)</td>
<td>31</td>
<td>359</td>
</tr>
<tr>
<td>Tuna, canned in brine</td>
<td>1 small tin (100 g)</td>
<td>24</td>
<td>99</td>
</tr>
<tr>
<td><strong>DAIRY/EGGS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cheese, cheddar</td>
<td>1 thick slice (40 g)</td>
<td>10</td>
<td>165</td>
</tr>
<tr>
<td>Cottage cheese</td>
<td>1 small carton (112 g)</td>
<td>15</td>
<td>110</td>
</tr>
<tr>
<td>Skimmed milk</td>
<td>1 glass (200 ml)</td>
<td>7</td>
<td>66</td>
</tr>
<tr>
<td>Low-fat yogurt, plain</td>
<td>1 carton (150 g)</td>
<td>8</td>
<td>84</td>
</tr>
<tr>
<td>Low-fat yogurt, fruit</td>
<td>Carton (150 g)</td>
<td>6</td>
<td>135</td>
</tr>
<tr>
<td>Fromage frais, fruit</td>
<td>1 small carton (100 g)</td>
<td>7</td>
<td>131</td>
</tr>
<tr>
<td>Eggs</td>
<td>1, jumbo size (63 g)</td>
<td>8</td>
<td>90</td>
</tr>
<tr>
<td><strong>NUTS/SEEDS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peanuts, roasted and salted</td>
<td>1 handful (50 g)</td>
<td>12</td>
<td>301</td>
</tr>
<tr>
<td>Peanut butter</td>
<td>on 1 slice bread (20 g)</td>
<td>5</td>
<td>125</td>
</tr>
<tr>
<td>Cashew nuts, roasted and salted</td>
<td>1 handful (50 g)</td>
<td>10</td>
<td>306</td>
</tr>
<tr>
<td>Walnuts</td>
<td>1 handful (50 g)</td>
<td>7</td>
<td>344</td>
</tr>
<tr>
<td>Sunflower seeds</td>
<td>2 tbsp. (32 g)</td>
<td>6</td>
<td>186</td>
</tr>
<tr>
<td>Sesame seeds</td>
<td>2 tbsp. (24 g)</td>
<td>4</td>
<td>144</td>
</tr>
<tr>
<td><strong>PULSES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baked beans</td>
<td>1 small tin (205 g)</td>
<td>10</td>
<td>166</td>
</tr>
<tr>
<td>Red lentils, boiled</td>
<td>3 tbsp. (120 g)</td>
<td>9</td>
<td>120</td>
</tr>
<tr>
<td>Red kidney beans, boiled</td>
<td>3 tbsp. (120 g)</td>
<td>10</td>
<td>124</td>
</tr>
<tr>
<td>Chickpeas, boiled</td>
<td>3 tbsp. (140 g)</td>
<td>12</td>
<td>169</td>
</tr>
<tr>
<td><strong>SOYA</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soya milk, plain</td>
<td>1 glass (200 ml)</td>
<td>6</td>
<td>64</td>
</tr>
<tr>
<td>Soya mince</td>
<td>2 tbsp. dry weight (30 g)</td>
<td>13</td>
<td>79</td>
</tr>
<tr>
<td>Tofu</td>
<td>Half a pack (100 g)</td>
<td>8</td>
<td>73</td>
</tr>
<tr>
<td>Tofu burger</td>
<td>1 burger (60 g)</td>
<td>5</td>
<td>71</td>
</tr>
<tr>
<td><strong>QUORN</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quorn mince</td>
<td>4 tbsp. (100 g)</td>
<td>12</td>
<td>86</td>
</tr>
<tr>
<td>Quorn chilli</td>
<td>1 bowl (200 g)</td>
<td>9</td>
<td>163</td>
</tr>
<tr>
<td>Quorn korma</td>
<td>1 bowl (200 g)</td>
<td>8</td>
<td>280</td>
</tr>
</tbody>
</table>

Source: TheHealthSciencesAcademy.org
Protein Meal Planner

Print and use this worksheet to plan your client's protein meals (give it to your client and keep a copy in your files!):

Name: ___________________________  Ideal daily protein intake: From _____g to _____g  Date: __ / __ / __

<table>
<thead>
<tr>
<th>Meal</th>
<th>Food options</th>
<th>Portion size</th>
<th>Protein grams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Lunch</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Dinner</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Snacks</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Post-exercise</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: The Health Sciences Academy
Calculate your ideal protein intake!

1. Identify your weight in kilograms (kg): ____ kg

2. Select your fitness goal:
   - Endurance training: 1.2–1.4 g/ kg body weight/ day
   - Power and strength training: 1.4–1.8 g/ kg body weight/ day
   - Weight (fat) loss programme: 1.6–2 g/ kg body weight/ day
   - Weight (muscle) gain programme: 1.8–2 g/ kg body weight/ day

3. Write down your protein requirement based on the guideline recommendations per activity type (above):
   From ____ g to ____ g per kg of body weight a day

4. Multiply your weight in kg by the protein recommendation in grams:
   ______ kg x _____g = _____ g protein
   ______ kg x _____g = _____ g protein

5. Your ideal protein intake is between ____ g and ____ g daily

6. Finally, list 3 protein foods to include in each meal to meet your total protein needs:
   Breakfast, lunch, dinner, snacks and post-exercise, and complete the Protein Meal Planner worksheet.
Remember the following key points!

✓ **Protein is needed for the maintenance, replacement and growth of body tissue.** It is used to make the enzymes and hormones that regulate the metabolism, maintain fluid balance, and transport nutrients in and out of cells.

✓ **Athletes and beginners undertaking an intensive exercise programme require more than the current RDA for protein** of 0.75 g/kg body weight/day for the general population.

✓ **Additional protein is needed** to compensate for the increased breakdown of protein during **intense training** and for the **repair and recovery of muscle tissue** after training.

✓ **Strength and power training implies additional protein needs to facilitate muscle growth.**

✓ For **endurance training**, the recommended intake is 1.2-1.4 g/kg body weight/day.

✓ For **strength and power training**, the recommended intake is 1.4-1.7 g/kg body weight/day.

✓ **Muscle loss is increased when muscle glycogen stores are low**, e.g. during intense exercise lasting more than 1 hour, or during a calorie/carbohydrate-restricted programme.

✓ **Protein intake above your optimal requirement will not result in further muscle mass or strength gains.**

✓ **Your client should be able to meet their protein needs from a well-planned diet that matches their calorie needs.**

✓ **Low-fat protein sources are advised.**

✓ **Vegetarian clients can meet their protein needs from low-fat dairy products, eggs and protein-rich plant sources** eaten in the right combinations so that protein complementation is achieved.

Source: The Health Sciences Academy
High-protein recipes!

Explore high-protein recipes and ideas by clicking on the links below:

- [101cookbooks.com](http://101cookbooks.com) – High Protein Recipes
- [food.com](http://food.com) – High Protein Recipes
- [quorn.co.uk](http://quorn.co.uk) – Quorn Recipes
- [allrecipes.co.uk](http://allrecipes.co.uk) – Vegetarian Protein Recipes
- [allrecipes.com](http://allrecipes.com) – Protein Recipes for Vegetarians
- [bbc.co.uk](http://bbc.co.uk) – Vegetarian Recipes with Meat Substitutes
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