

PN Professional Nutrition Calculator: How it works

About this guide

The PN Professional Nutrition Calculator is designed to be used by qualified nutrition coaches and/or health and fitness professionals with a strong base of nutritional knowledge and a desire to individualize dietary recommendations for clients.

As such, it offers many more customization options than the publicly available Nutrition Calculator.

In this guide:

- We'll outline the rules and math that govern the PN Professional Nutrition Calculator, and provide important tips and notes on how specific features work.
- We'll also explain how we arrived at the energy (calorie) and macro recommendations delivered by the calculator.

Calculating energy needs

This calculator uses the same baseline algorithm as the [Precision Nutrition Weight Loss Calculator](#) to calculate maintenance, weight loss, and weight gain energy needs, in the form of daily calorie (kilocalorie) intake.

This algorithm is a mathematically validated model based on the [NIH Body Weight Planner](#) and adapted from research collected at the [National Institutes of Diabetes and Digestive and Kidney Disease](#), which calibrates complex mathematical predictions of change against measurements of how actual people's bodies change in the "real world" (rather than simply theoretical constructs of how weight or body composition change "should" work).

One of the most valuable contributions of this research is to show that real-life body change depends on the dynamic ability of our metabolisms to adapt to perturbations — for instance, eating significantly more or less energy (calories) — over time.

Using a large data set, this algorithm predicts with relative accuracy how long it might take you to reach a specific body weight goal, given other conditions (such as your starting weight or degree of energy deficit).

(For more reading on metabolic adaptation, please refer to our article [Can Eating Too Little Actually Damage Your Metabolism?](#))

What changes the equation and calculation parameters?

1. Goals

For people looking to improve health, the calculator uses the weight maintenance calories determined by the validated mathematical model of the NIH algorithm. The end goal here is to provide appropriate macronutrients and portion sizes, and improve food choices to improve overall health and well-being.

For people looking to lose weight, the calculator uses the validated mathematical model of the NIH algorithm. This takes into account a host of anthropometric data, time desired to reach goal, and the adaptive nature of human metabolism.

For people looking to build muscle, the calculator uses the validated mathematical model of the NIH algorithm. This takes into account a host of anthropometric data, time desired to reach goal, and the adaptive nature of human metabolism.

For people looking to improve athletic performance, the calculator adds an additional 10% more calories to the weight maintenance requirements calculated by the NIH algorithm. This supports the increased demands of intense athletic performance and training and is best suited for those who compete athletically at high levels and are extremely active (e.g., intense movement >10 hours/week, or total movement of >20 hours/week).

For people looking to change their body composition with minimal weight change, the calculator lowers calorie needs by 10% from the weight maintenance requirements calculated by the NIH algorithm. This will help facilitate simultaneous fat loss and muscle growth. It should be noted that this approach is most appropriate for untrained or detrained individuals who don't wish to change their body weight by more than 10 to 15 pounds (about 4.5 to 7 kg), yet want to improve their body composition.

2. Body composition

As you have learned in your course materials, having a lower-than-average body fat percentage (i.e., higher-than-average lean mass percentage) will increase calorie needs by a small margin.

This is due to skeletal muscle mass having a slightly greater metabolic rate compared to body fat (by ~4 kcalories per pound per day).

3. Inputting a custom Resting Metabolic Rate (RMR)

The NIH algorithm uses a RMR average based on population-wide models for an individual's age, sex, height, and weight.

However, it's known that RMR ranges by about 15%, even between people of the same age, sex, height, and weight.

Inputting an individually measured RMR will change overall calorie needs accordingly, depending upon how different the custom input is compared to the estimated average.

4. Timelines

As noted above, the NIH model determines calories needs dynamically, and takes into account the length of time desired to reach the body change goal, as well as how the human body typically adapts its energy output when intake is changed to determine final calorie recommendations.

In addition, you will see a feature called **Time Frame Estimates** that provides guidelines for determining appropriate time frames to reach the desired goal.

You can use these estimates in one of two ways.

1. To help your clients determine an appropriate time frame to reach their goal, according to the lifestyle they want to live. See the [Cost of Getting Lean](#) for more guidance on balancing these two elements.
2. To let your clients know if their desired timeframe is within the realm of possibility, not only physiologically but in terms of how ready, willing, and able they would have to be to reach their goal in their desired time frame.

These time frame estimates are based on the realistic rates of progress outlined in your course materials, for both weight loss and muscle gain.

Please refer to Unit 3 in PN Definitive Guide: The Science and Practice of Macros, or Unit 3 in the 4th edition of the Level 1 Precision Nutrition Certification for the specifics.

Macro math

For the pre-set Macronutrient Ratio options (i.e., Balanced, Low-fat, Low-carb) the macronutrients are calculated by many rules.

For a Level 1 eater

1. Protein is set on a grams per unit of bodyweight basis, at a range of 0.6-1.35 g/lb (1.3-3 g/kg), depending upon biological sex, weight, goal, and activity level. (For “Very low-fat” and “Very low-carb” pre-set options, protein is set at 20% of calories, not on a bodyweight basis.)

2. Protein needs are also set on a sliding scale since, as on average, even within the same goal and activity level, heavier folks would generally have a greater body fat percentage than lighter folks. Therefore, they require a smaller amount of protein on a bodyweight basis (though still higher on an absolute basis).
3. Then, dependent upon the Macronutrient Ratio chosen, either fat or carbohydrates are set at a particular percent of calories to determine the allocation of the remaining non-protein calories. (For example, “Low-fat” is set at 20% calories from fat, and “Low-carb” is set at 20% calories from carbs).
4. Finally, the rest of the calories are filled out by the remaining macronutrient (either fat or carbs). Note, if “Balanced” was chosen, the non-protein calories are split evenly between fats and carbs.

For a Level 2 or 3 eater

Inputting a custom percent body fat percentage directly into the calculator can change the daily protein target. This depends on actual body fat as well as the chosen goal.

1. Protein is first set on a grams per unit of bodyweight basis.
 - a. For women with body fat >22%, the protein needs are calculated the same as above.
 - b. For women with body fat between 17-22%, the protein needs are calculated at a range of 0.9-1.2 g/lb (2-2.65 g/kg), depending upon goal and activity level, and aren't set on a sliding scale.
 - c. For women with body fat <17%, the protein needs are calculated at a range of 1-1.35 g/lb (2.2-3 g/kg), depending upon goal and activity level, and aren't set on a sliding scale.
 - d. For men with body fat >15%, the protein needs are calculated the same as above.
 - e. For men with body fat between 10-15%, the protein needs are calculated at a range of 1-1.35 g/lb (2.2-3 g/kg), depending upon goal and activity level, and aren't set on a sliding scale.
 - f. For men with body fat <10%, the protein needs are calculated at a range of 1.1-1.5 g/lb (2.4-3.3 g/kg), depending upon goal and activity level, and aren't set on a sliding scale.
2. Then, depending upon the Macronutrient Preference chosen, either fat or carbohydrates are set at a particular percent of calories to determine the allocation of the remaining non-protein calories. (For example, “Low-fat” is set at 20% calories from fat, and “Low-carb” is set at 20% calories from carbs.)
3. Finally, the rest of the calories are filled out by the remaining macronutrient (either fat or carbs). Note, if “Balanced” was chosen, the non-protein calories are split evenly between fats and carbs.

Important note

Since protein is first set on a gram per unit of bodyweight basis for the pre-set options of Balanced, Low-fat, and Low-carb, the exact macronutrient percentages will vary from their given approximates (which is why they are noted as approximates in the first place).

In most cases, the true macronutrient percentages will be within $\pm 5\%$ of the given estimates.

However, at low calorie levels the percentages can differ from their given approximates significantly, with protein making up a much higher percentage of calories. This is especially true for aggressive fat loss goals.

In addition, at very high calorie levels protein will often make up 20-25% of calories. This happens most often for highly active individuals who choose athletic performance as their goal, or for aggressive muscle gain goals.

If this feels inappropriate to you, you can either change the timeline of the goal, or customize the intake as you deem appropriate. See the section below on customizing intake.

Physical activity levels

The mathematically validated energy needs model based on the [NIH Body Weight Planner](#) and adapted from research collected at the [National Institutes of Diabetes and Digestive and Kidney Disease](#) relies on two questions to determine overall physical activity.

1. Frequency and duration of your workouts.
2. General daily life movement (essentially, your NEAT, or non-exercise activity thermogenesis).

The options are as follows...

Workout activity

Weekly purposeful exercise (i.e., deliberately “working out” or “training”) has 5 distinct options:

1. **Very light.** Almost no purposeful exercise.
2. **Light.** 1-3 hours of gentle to moderate exercise.
3. **Moderate.** 3-4 hours of moderate exercise.
4. **Intense.** 4-6 hours of moderate to strenuous exercise.
5. **Very Intense.** 7+ hours of strenuous exercise.

Daily life activity

Daily life activity *excluding purposeful exercise* has 4 distinct options:

1. **Very Light.** Sitting most of the day (example: desk job).
2. **Light.** A mix of sitting, standing, and light activity (example: teacher).
3. **Moderate.** Continuous gentle to moderate activity (example: restaurant server).
4. **Heavy.** Strenuous activity throughout the day (example: construction work).

Your answers to these questions generates a physical activity multiplier. Typical physical activity level multipliers range from 1.4 (sedentary) to 2.3 (very active).

When in doubt, it's better to underestimate activity rather than overestimate it.

Adjusting the multiplier

If the estimated physical activity multiplier generated from answering these two questions doesn't seem appropriate to you (e.g., perhaps you do a lot of brief but intense physical training, such as high-intensity interval training that isn't adequately captured in the workout answer options), you have the option to override it, and input a custom multiplier.

This can also be appropriate for clients who are extremely active (such as Ironman triathletes, or high-level athletes during training camp) or extremely inactive (such as during bed rest).

Note that calorie and protein calculations will be affected by these changes.

Protein calculations might be adjusted when overriding the estimated physical activity multiplier. This is due to protein allocation rules being tied to overall activity levels.

The protein rules referred to here are outlined in your course materials. Please refer to Unit 2 in PN Definitive Guide: The Science and Practice of Macros, or Unit 3 in the 4th edition of the Level 1 Precision Nutrition Certification for the specifics.

- If the physical activity multiplier is between 1.4-1.6, the calculator assumes this person is lightly active overall, and applies the appropriate protein rules.
- If the physical activity multiplier is between 1.7-1.9, the calculator assumes this person is moderately active overall, and applies the appropriate protein rules.
- If the physical activity multiplier is 2 or greater, the calculator assumes this person is highly active overall, and applies the appropriate protein rules.

Dietary preferences

There are 6 different dietary preference options.

1. **Anything.** “Anything” means there are no major preferences or restrictions, and practically any food is on the table (so to speak). Variety is preferred, there are no major food intolerances or allergies, and a willingness to try new foods.
2. **Mediterranean.** The Mediterranean preference emphasizes a plant-rich diet, with lots of vegetables, fruits, whole grains, legumes, olive oil, nuts, and seeds. It also encourages moderate amounts of fish, seafood, poultry, eggs, and dairy.
3. **Paleo.** The Paleo eating style emphasizes red meat (especially grass-fed), poultry, fish, and seafood along with lots of vegetables, some fruits, and plenty of healthy fats. It strongly limits or excludes grains, beans, legumes, and dairy.
4. **Vegetarian.** The vegetarian eating style emphasizes a plant-rich diet, with plenty of whole grains, legumes, vegetables, fruits, nuts, and seeds, along with small amounts of eggs and dairy. No red meat, pork, poultry, fish, or seafood.
5. **Fully plant-based.** Fully plant-based means eating a diet that is plant-only, which includes lots of whole grains, legumes, vegetables, fruits, nuts, seeds, and oils. All animal products are excluded. Protein-rich plant foods such as tempeh, tofu, and seitan are also encouraged.
6. **Ketogenic.** A ketogenic diet emphasizes lots of fats, with moderate amounts of protein. It severely restricts carbohydrates, including grains, beans, legumes, potatoes, and fruits. Butters, oils, and red meat are encouraged.

Important note

These preferences have specific limits placed on them when customizing the macronutrient percentages, to align with how people who choose these eating styles typically eat, and to ensure the suggestions in the Meal Ideas section in the complete report work correctly.

These limits are significantly broadened compared to the limits in the publicly available Precision Nutrition Calculator, as you now have the expertise to adjust these with even more discretion.

(Side note: It’s fun to select Customize Macro Percentages and then change the chosen Dietary Preference to see how the limits and default settings change for each!)

Customizing macros and hand portions

As a trained fitness professional (or as a highly-educated nutrition-enthusiast) you have the ability to customize the recommendations as specifically as possible to the needs and preferences of your clients (or yourself).

There are several pre-set macronutrient options for each dietary preference. Some set protein first, on a bodyweight basis, and determine the remaining macronutrients as a percent of calories from there (these are Balanced, Low-carb, and Low-fat). Very low-carb and Very low-fat set all the macronutrients on an exact percent-calorie basis.

There are many options for you to customize the macros and hand portions in our Professional Nutrition Calculator that are not available in the public Precision Nutrition Calculator...

Customize macro percentages*

With customize macro percentages, you can choose the exact macronutrient percentages your client would prefer to eat, or would best help them meet their goals, within the given constraints of their dietary preference.

These dietary preference-specific constraints are significantly broadened compared to the limits in the publicly available Precision Nutrition Calculator, as you now have the expertise to adjust macronutrient percentages with more discretion.

In addition, you can adjust macro percentages with a newly improved and elegant system. In this Pro Calculator you can also see how many grams those adjustments equal in real time as you move the sliders. (And of course, hand portions are appropriately adjusted automatically.)

*In the publicly available free calculator, this is the only customization tool available, but it does not display the gram amounts as you move the sliders. Instead, you can only see the gram amounts when you progress to the results screen. And as noted above, in the free calculator you have far less leeway to make adjustments within each dietary preference.

This option allows you to apply all that you have learned in you course materials if you prefer to calculate macros manually on a percent basis. Please refer to Unit 2 in PN Definitive Guide: The Science and Practice of Macros, or Unit 3 in the 4th edition of the Level 1 Precision Nutrition Certification for specific guidance.

Customize macro grams

With customize macro grams you can:

- play with assigning differing levels of each macronutrient on a body weight basis; and
- calculate the given macros within this tool itself, using the calories the calculator has determined to be appropriate.

With this option you can calculate macros (and therefore hand portions) using your preferred bodyweight multipliers *within the estimated calorie needs*, if you choose that over relying on the calculator's estimation of macronutrient needs.

You can determine protein, carb, and fat needs on a g/lb or g/kg basis and see those gram numbers (and the resulting macronutrient percentages) update in real time as you make the calculations.

This option allows you to apply all that you have learned in you course materials if you prefer to calculate macros manually on a grams per unit of bodyweight basis. Please refer to Unit 2 in PN Definitive Guide: The Science and Practice of Macros, or Unit 3 in the 4th edition of the Level 1 Precision Nutrition Certification for specific guidance.

Enter desired macro totals

When you enter desired macro totals, those numbers will override the calculations of the calculator (it will tell you this). Both calories and hand portions provided will also be based on those custom macronutrients.

This feature is especially helpful if your client:

- has a preferred amount of macronutrients like they to consume, but would benefit from the full report given by the calculator
- has a preferred amount of macronutrients like they to consume, but would like to transition that intake to hand portions
- needs to adjust their intake to continue to make desired progress

Enter desired hand portions

When desired hand portions are entered, those numbers will override the calculations of the calculator (it will tell you this). Both calories and macronutrients provided will also be based on those custom hand portions (by reversing the math used to go from macros to hand portions).

This feature is especially helpful for meeting your client where they are at.

For example, if the calculator estimates that your client needs a daily intake of...

- 6 palms
- 6-8 fists
- 5 handfuls
- 4 thumbs

....but is currently eating an average of...

- 3 palms
- 2 fists
- 9 handfuls
- 9 thumbs

...that's a huge leap for most folks to make.

So, you can let them know what the tentative end-goal intake is (and generate a report for that).

But you can also input your own portion numbers, say...

- 4 palms
- 4 fists
- 8 handfuls
- 7 thumbs

...to better meet them where they are at and progress them towards a more appropriate intake for their goals.

You can then generate a report with your starting-point custom-recommended hand portions and have them start there. Then progressively adjust the portions towards their end goal, while also making adjustments using outcome-based decision making. (For example, after a couple of weeks, the suggested intake might become 5 palms, 5 fists, 6 handfuls, and 6 thumbs. And then reach the final intake in a few more weeks after that.)

In addition, this feature is also useful when a client needs to adjust their intake to continue to make desired progress.

Hand portion math

The hand portion amounts are determined based on the calorie and macronutrient calculations as outlined above, and then converted to hand-sized portions using the approximate size and macronutrient equivalents.

The hand-sized portion math is further outlined in your course materials. Please refer to Unit 2 in PN Definitive Guide: The Science and Practice of Macros, or Unit 3 in the 4th edition of the Level 1 Precision Nutrition Certification for the specifics.

Business logo

This is another feature only available with the PN Professional Nutrition Calculator. Here, you can upload your business logo or other desired image to add to the bottom-left corner of every page of the final report and eating guide.

This makes it clear that this report is from YOU, not from Precision Nutrition. And adds a personalized, professional touch.

Sharing the report

Before sharing the report with clients take a moment to ensure:

- client name is spelled correctly
- your name and business name are spelled correctly
- results are appropriate, within realistic rates of progress, and will meet client's expectations (or you're prepared to talk about why they might be different than expectations)

Multiple client reports

When generating reports for multiple clients, it is highly recommended that you clear the calculator between each client by refreshing your browser. This helps prevent accidentally providing incorrect inputs on a client, and therefore generating potentially inappropriate results. And with the vast array of customization features, this helps prevent the calculator from getting confused when inputs are constantly changing!

Further questions

If you have further questions about the PN Professional Nutrition Calculator, please reach out to l1coach@precisionnutrition.com. Or, if you have purchased our Level 1 Certification, ask in the PN Certification Students & Grads FB group.