Calories and Macro's

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1. The following should be taken as general advice. It should not be used in the face of medical contraindications.
Consult your physician before starting any diet or nutrition plan.
2. If you create a spreadsheet & post it I will DELETE THEM.
The point is to DO THE MATHS and THINK about what you need WITHOUT resorting to a pre-generated 'spit out' number!
3. IF YOU ARE LESS THAN 18 YRS OF AGE - THESE FORMULAS WILL NOT BE ACCURATE due to the energy cost of growth, the inefficient movement of youth & your higher surface area:mass ratio. Look HERE for alternatives. Also - I would also STRONGLY suggest you don't OBSESS! Eat well, exercise regularly, and have fun. Being hyper focused on diet / training can create disordered eating & body image issues

Basic Terminology

1/ **BMR (Basal Metabolic Rate)**: The amount of calories you need to consume to maintain your body if you were comatose (base level).
2/ **NEAT (Non-Exercise Associated Thermogenesis)**: The calorie of daily activity that is NOT exercise (eg: washing, walking, talking, shopping, working). ie: INCIDENTAL EXERCISE! It is something that everyone has a good amount of control over.
3/ **EAT (Exercise Associated Thermogenesis)**: The calorie requirements associated with planned exercise. Unless someone is doing a whole heap of exercise (eg: two or more hrs training a day) it usually doesn't add a stack of calories to your requirements (30 minutes of 'elliptical training' isn't going to burn 6000 cals) 😊
4/ **TEF (Thermic effect of feeding)**: The calorie expenditure associated with eating.REGARDLESS of what myths you have been told - this is NOT dependent on MEAL FREQUENCY. It is a % of TOTAL CALORIES CONSUMED (and 15% of 3 x 600 cal meals is the same as 15% of 6 x 300 cal meals). It varies according to MACRONUTRIENT content and FIBER content. For most mixed diets, it is something around 15%. Protein is higher (up to 25%), carbs are variable (between 5-25%), and fats are low (usually less than 5%). So more protein and more carbs and more fiber = HIGHER TEF. More FAT = LOWER TEF.
5/ **TEE (Total Energy Expenditure)**: The total calories you require - and the sum of the above (BMR + NEAT + EAT + TEF).
To make things simple, NEAT + EAT + TEF is often just calculated through a daily ACTIVITY FACTOR.

How much do I Need?

A multitude of things impact MAINTENANCE calorie needs.
- Age & sex (males generally need > females)
- Total weight & lean mass (more lean mass = more needed)
- Physiological status (eg: sick or injured, pregnant, growth')
- Hormones
- Exercise level (more activity = more needed)

- Daily activity level (more activity = more needed)
- Diet (that is - macronutrient intake)

In order to calculate your requirements the most accurate measure is Calorimetry [the measure of 'chemical reactions' in your body & the heat produced by these reactions], either directly (via a calorimeter where the heat you produce is measured) or indirectly (eg: HOOD studies where they monitor how much oxygen you use/ carbon dioxide and nitrogen you excrete over a given time). But these are completely impractical for most people & we mostly rely on pre-set formula to calculate our needs.

Estimating Requirements
The simplest method uses a standard 'calories per unit weight (usually kgs)'. They calculate a TOTAL CAL REQUIREMENT (TEE). They are:
- 26 to 30 kcals/kg/day for normal, healthy individuals with sedentary lifestyles doing little physical activity [12.0-14 kcal/pound]
- 31 to 37 kcal/kg/day for those involved in light to moderate activity 3-5 x a week with moderately active lifestyles [14-16 kcal/ pound]
- 38 to 40 kcals/kg/day for those involved in vigorous activity and highly active jobs [16-18 kcal/ pound].
For those involved in HEAVY training (eg: athletes) - the demand is greater:
- 41 to 50 kcals/kg/day for those involved in moderate to heavy training (for example: 15-20 hrs/ week training) [18.5-22 kcal/ pound]
- 50 or above kcals/kg/day for those involved in heavy to extreme training [> 22 kcal/ pound]

There are also other formula which calculate **BMR**. You then have to ADD IN ACTIVITY TO REACH TEE. These are:
1/ **Harris-Benedict formula**: Very inaccurate & derived from studies on LEAN, YOUNG, ACTIVE males in 1919. Notorious for OVERESTIMATING requirements, especially in the overweight. DON'T USE IT!
MEN: BMR = 66 + [13.7 x weight (kg)] + [5 x height (cm)] - [6.76 x age (years)]
WOMEN: BMR = 655 + [9.6 x weight (kg)] + [1.8 x height (cm)] - [4.7 x age (years)]

2/ **Mifflin-St Jeor**: Developed in the 1990s and more realistic in todays settings. Still doesn't consider the differences as a consequence of high BF%. Thus it again OVERESTIMATES NEEDS, ESPECIALLY IN THE OVERWEIGHT.
MEN: BMR = [9.99 x weight (kg)] + [6.25 x height (cm)] - [4.92 x age (years)] + 5
WOMEN: BMR = [9.99 x weight (kg)] + [6.25 x height (cm)] - [4.92 x age (years)] -161

3/ **Katch-McArdle**:Considered the most accurate for those who are relatively lean. Use if you have a good estimate of your bodyfat %.
BMR = 370 + (21.6 x LBM)Where LBM = [total weight (kg) x (100 - bodyfat %)]/100

Again - these are BMR calculations. **To convert to a TOTAL requirement** you need to multiply the result by an 'activity variable'.
This **Activity Factor** is the **TOTAL cost of living, NOT JUST TRAINING**.
If you train 1 hr a day - CONSIDER WHAT YOU DO THE OTHER 23 HRS! It includes work, life activities, training/sport & the TEF of ~15% (an average mixed diet).
Average activity variables are:

1.2 = Sedentary (Desk job, and Little Formal Exercise)
1.3-1.4 = Lightly Active (Light daily activity AND light exercise 1-3 days a week)
1.5-1.6 = Moderately Active (Moderately daily Activity & Moderate exercise 3-5 days a week)
1.7-1.8 = Very Active (Physically demanding lifestyle & Hard exercise 6-7 days a week)
1.9-2.2 = Extremely Active (Athlete in ENDURANCE training or VERY HARD physical job)

How Accurate are they?: Rough ball-park figures. Still 'guesstimations'. So use these as 'rough figures', monitor your weight/ measurements for 2-4 weeks. IF your weight is stable/ measurements are stable, you have likely found maintenance.

Using the Above to Recalculate Based on Goals

You then need to DECREASE or INCREASE intake based on your goals (eg: lose or gain mass). For this - DO NOT use a 'generic calorie amounts' (eg: 500 cals/ day) to add / remove. Instead calculate a % of your maintenance. Why? The effect of different calorie amounts is going to be different based on someones size/ total calorie intake. For example - subtracting 500 cals/ day from a 1500 total intake is 1/3rd of the total cals, where 500 cals/ day from 3000 total intake is only 1/6th of the total. The results will therefore be markedly different on an individuals energy level & weight loss. Generally:
- To ADD weight: ADD 10-20% of the TEE to your TEE calories
- To LOSE weight: SUBTRACT 10-20% of the TEE to your TEE calories
Then monitor your results and adjust as required.

Macronutrient Needs

Once you work out calorie needs, you then work out how much of each macronutrient you should aim for. **This should NOT be based on a RATIO of macro intakes. (eg: '30:40:30 or 40:40:20')** Your body doesn't CARE what % intake you have. It works based on SUFFICIENT QUANTITY per MASS.

1. **Protein**: Protein intake is a bit of a controversial issue in nutrition. The general recommendations given in the 'bodybuilding' area are nearly double the 'standard' recommendations given in the Sports Nutrition Arena.
So - GENERAL sports nutrition guideline based on clinical trials suggest that in the face of ADEQUATE calories and CARBS the following protein intakes are sufficient:
STRENGTH training -> 1.4 to 2g per KG bodyweight (about .6 / pound)
ENDURANCE training -> 1.2 to 1.8g per KG bodyweight (about .8 / pound)
ADOLESCENT in training -> 1.8 to 2.2g per KG bodyweight (about 1g / pound)
BUT this is 'sufficient' intakes for training. One should note that ADEQUATE v's OPTIMAL is not discussed when it comes to hypertrophy v's 'athlete performance'.
Researchers also acknowledge that **protein becomes MORE important in the context of LOWER calorie intakes, or LOWER carb intakes.**
Recent evidence also suggests that **protein intakes of 2.2-3g/kg help with LEAN MASS RETENTION, and the physiological and psychological stressors associated with high volume or intense training**.
Also - Anecdotally, most find HIGHER protein intake better for satiety, partitioning, blood sugar control, and hypertrophy. So UNLESS you have medical reasons for lower protein, or unless guided by your sports nutritionist or physician to use the GENERAL sports nutrition guidelines, I would suggest BODYBUILDING values.

General 'bodybuilding' guidelines for protein as follows:
- Moderate bodyfat, Moderate training load, moderate calorie = 2.0-2.6g per kg TOTAL weight (about 0.9-1.2g per pound)
- Low bodyfat or Very Low Calorie, Low Carb, High training load = 2.2-3g per kg TOTAL weight (1.0-1.35g per pound)
- High bodyfat, high calorie, Low training load = 1.6 to 2.2g per kg TOTAL weight (.75-1g per pound)

2. **Fats**: Generally speaking, although the body can get away with short periods of very low fat, in the long run your body NEEDS fat to maintain health, satiety, and sanity. Additionally - any form of high intensity training will benefit from a 'fat buffer' in your diet - which controls free radical damage & inflammation. General guides:
Average or low bodyfat: 1-2g fat/ kg body weight [between 0.4-1g total weight/ pounds]
High bodyfat: 1-2g fat/ Kg LEAN weight [between 0.4-1g LEAN weight/ pounds]
Low calorie dieting: You can decrease further, but as a minimum, I would not suggest LESS than about 0.30g/ pound.
Note 1: Total fat intake is NOT the same as 'essential fats' (essential fats are specific TYPES of fats that are INCLUDED in your total fat intake)...

3. **Carbs**: For carbs there are no specific 'requirements' for your body. But carbs are important for athletes, ACTIVE individuals, or those trying to GAIN MASS. [carbs help with workout intensity, health, & satiety (+ sanity)]. THEY ARE NOT THE DEVIL. And if you are an athlete involved in a good volume of training I would suggest you CALCULATE a requirement for carbs as a PRIORITY - then go back and calculate protein / fat:
Moderately active: 4.5 - 6.5 g/ kg (about 2 - 3g/ pound)
High active: 6.5 - 8.5 g/ kg (about 3 - 4g/ pound)
INTENSE activity: + 8.5g / kg (more than 4g/ pound)

For 'general gymers'- simply calculate intakes based on calories left over from subtracting fats/ protein from your TEE:
carb cals = Total cal needs - ([protein grams x 4] + [fat grams x 9])
carb grams = (carb cals)/ 4

Links:
How do I count Calories accurately? *Check out Calorie Counting Websites
What are Macronutrients and Micronutrients? *Check out Macro & micronutrients explained!
Funky Bodyweight Tool Thread *Check Out Funky Tool