

# August 3, 2018

This week's post will focus on the last of the three macronutrients: fat (lipids). This week, I am trying out a different type of format for the post. The past couple of weeks have been very word-heavy with information, so in hopes of making the posts a little more interesting and viewer-friendly, I am going to try incorporating more videos and resources I think do a good job covering the points I believe are most important in understanding the basics. There is so much information on fat out there, and a lot of it is contradictory, but ultimately fat is essential in the diet and the right kinds promote health and well-being. I will do my best to provide you with unbiased information regarding this macronutrient and share with you the recommendations for how much and what type to consume, but it can also be very personal as to how you feel consuming different amounts and from various sources. It might take some experimenting with yourself and how you tolerate various amounts of fat, but I have found for myself, consuming higher amounts of fat from whole-food sources leaves me satiated for longer and helps me feel stronger during and after workouts. Again, it is personal on how much is right for you but trying new things can lead you to some neat discoveries!

## Macronutrient of the Week: [Fat \(Lipids\)](#)

Fat is a macronutrient that—like carbohydrates—contains carbon, hydrogen, and oxygen atoms. The majority of the fat we consume in our diet is in the form of triglycerides, which are also the form in which fat is stored in our bodies. Triglycerides are molecules consisting of three fatty acids that are attached to a three-carbon glycerol backbone (Thompson, Manore, & Vaughan, 2014, p. 175). Fatty acids are long chains of carbon atoms bound to one another as well as hydrogen atoms and are classified by the number of carbons in the chain as well as the number of double bonds present (level of saturation).

Triglycerides can vary in chain length, being short-chain (less than six carbons), medium-chain (six to twelve carbons), and long-chain fatty acids (fourteen or more carbons) (Thompson, Manore, & Vaughan, 2014, p. 176).

In addition to length, they may vary in their level of saturation—the number of double bonds present. Saturated fatty acids do not have any double bonds and are typically solid at room temperature (think coconut oil, butter, cream, animal fats, whole milk, and full-fat cheese) (Thompson, Manore, & Vaughan, 2014, p. 176).

[Monounsaturated fatty acids](#) have one double bond between carbon atoms and common examples are nuts, avocados, olive oil, peanut butter/oil, and sesame oil.

[Polyunsaturated fatty acids](#) are the third level of saturation for triglycerides. They contain two or more double bonds between carbon atoms in their chain and common examples are walnuts, sunflower seeds, flax seeds, fish (salmon, mackerel, herring, tuna, & trout), soybean oil, and safflower oil.

### *Trans Fats*

[What are they?](#) [More on fats & trans fats](#)

## *Why Do We Need Fat?*

Dietary fat is essential for heart health, regulating blood pressure, promoting healthy skin and hair, it helps to protect vital organs and aids in the absorption of fat-soluble vitamins (vitamins A, D, E, & K), and is also an essential component of hormones in the body (17). [Essential fatty acids](#) (video below goes more in-depth on what these are and sources of them) are critical in helping the body fight infection and reduce inflammation, as well as helping cells maintain their function, and play an important role in maintaining and developing tissues of the nervous system and assist in the transmission of impulses between nerve cells (Thompson, Manore, & Vaughan, 2014, p. 190-191).



## *Importance for Athletes*

It is important that athletes consume enough fat in their diet. Under-consuming enough fat for an individual's needs can lead to less triglyceride storage in muscles, causing earlier fatigue in endurance or longer training sessions. Not consuming enough dietary fat can also decrease serum testosterone levels, resulting in decreases in muscle mass and strength. Because fat is necessary for the absorption of fat-soluble vitamins, not consuming enough in the diet can decrease bone health as well, increasing the risk of injury (Bonci, 2009, p. 18). On the other hand, those who consume too many fats from sources such as fried foods, condiments, and processed foods may experience an increase in fat stores (↑body fat %) from consuming excess calories (Bonci, 2009, p.18).

Also, something to note is that fat takes longer for your body to digest, so eating too much too close to training can cause you to feel bloated, nauseous, or like your food is just sitting like a rock in your stomach.

What worked for me when I was training was to consume a small amount of fat before training and in between closely scheduled training sessions (ex: two whole eggs, handful of nuts, 1 TBSP nut butter on toast, avocado toast, etc.) and then consume more either at dinner or if I knew I had at least 4-5 hours before a harder session. \*\*For myself, consuming a little bit more fat before long bike rides or lower intensity training did not hinder my performance, but what your body can handle is personal to you. I recommend experimenting in the off-season or pre-season, or during a period of training that is not close to upcoming competitions. Do not try and dramatically change things right before a competition!

## How much do you need?

So now that you know *why* the right kinds of fat are important for you, how much should you be consuming? The recommended daily amount is said to be anywhere from 20-35% of your daily calories. This can be confusing, so another way to calculate a rough estimate for how much fat you should be consuming is to take your weight in pounds and multiply it by 0.45 to get the number of grams of fat per day. Here is that equation again:

$$\text{Weight (lbs)} \times 0.45 = \text{grams fat/day}$$

Again, this is merely an estimate based off your weight. Some people feel better consuming more fat while others feel better consuming less. The only way to know what works best for you is to try eating different amounts on various training schedules and mixing up your sources to see what suits you.

## Ways to increase healthy fat intake

If you are looking for ways to increase your fat intake, or ways to consumer healthier sources of fat in your diet, you are in luck! These changes do not have to be drastic and you do not have to consume foods you do not like to meet these goals. Simple ways to incorporate healthier fats into your diet are to cook foods using olive oil or coconut oil. Tossing protein and veggies in oil and seasoning with various herbs and spices, then cooking the dish in the oven is just one way to add healthy fat to your meals. You can add nuts and seeds to salads, oatmeal, or trail mix, as well as use olive oil and balsamic vinegar as an alternative to store-bought salad dressings. Avocado is awesome to incorporate into salads, on sandwiches, toast, burgers, any sort of Mexican-style dish, and some people even enjoy them on their own!

[Some more healthy fats](#)

## Why fat-free is not necessarily healthy



### References (Information & Photos):

Bonci, L. (2009). *Sport nutrition for coaches*. East Peoria, IL: Versa Press.

Thompson, J., Manore, M., Vaughan, L. (2014). *The science of nutrition: Third edition*. Glenview, IL: Pearson Education.

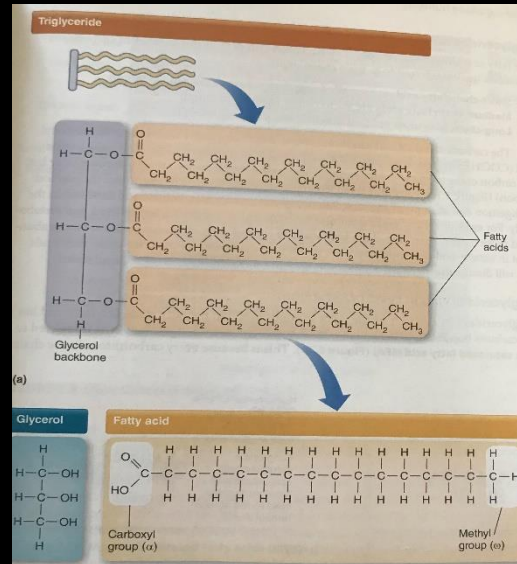
Manore, M., Meyer, N., Thompson, J. (2009). *Sport nutrition for health and performance: Second edition*. Champaign, IL: Human Kinetics.

Right:

Top image:  
triglyceride

Bottom image:  
glycerol molecule &  
fatty acid chain

Below: Example of  
calculated fat needs  
+ example of foods  
eaten to meet  
athlete's  
requirements



## Example

A 140-pound (64 kg) basketball player would require the following amount of fat daily:

$$140 \text{ pounds} \times .45 = 63 \text{ grams of fat}$$

$$(64 \text{ kg} \times 1 = 64 \text{ grams of fat})$$

Here's a meal plan that would achieve this fat intake.

### Breakfast

A bagel with 2 tablespoons of peanut butter  
8 ounces (180 mg) skim milk  
Fat: 16 grams

### Lunch

Baked ham sandwich containing the following:  
Three slices baked ham  
One slice part-skim provolone cheese  
1/2 tablespoon mayonnaise  
One apple  
Fat: 15 grams

### Snack

Pretzels mixed with 1/4 cup (35 g) nuts  
Fat: 15 grams

### Dinner

4 ounces (125 g) chicken  
Broccoli sautéed in a little garlic  
and olive oil  
Baked potato with 2 teaspoons of light  
butter  
8 ounces (240 ml) skim milk  
Fat: 15 grams

### Evening Snack

8 ounces (240 ml) low-fat yogurt and  
a banana  
Fat: 9 grams

**Grand total: 70 grams of fat**

## Below: Composition of fat in common foods

Table 3.1 Composition of Common Fat-Containing Foods

Food	% of total kcal from fat	% total fat kcal as omega-3 and -6	Distribution of fat by type		
			% total fat kcal as Saturated Fatty Acids	% total fat kcal as Monounsaturated Fatty Acids	% total fat kcal as Polyunsaturated Fatty Acids
Butter	100	4	65	31	4
Milk, whole 3.3% fat	49	4	63	33	4
Milk, 2% fat	40	4	66	30	4
Milk, nonfat	4	>1	73	30	>1
Beef, ground 16% fat	54	4	45	51	4
Chicken, boneless	35	20	18	44	24
Turkey, boneless	26	28	32	25	35
Tuna, water packed	6	39	32	22	46
Tuna, oil packed	37	36	21	40	39
Salmon, Chinook	33	16	25	48	24
Egg, large	62	13	37	46	16
Canola oil	100	30	7	59	30
Safflower oil	100	74	9	12	74
Corn oil	100	60	13	25	60
Corn oil margarine	100	—	2	27	27
Sesame oil	100	42	15	42	44
Olive oil	100	10	14	74	10
Salmon oil (fish oil)	100	34	20	29	40
Cottonseed oil	100	50	26	20	52
Palm kernel oil	100	2	82	11	2
Coconut oil	100	2	87	6	2
Walnuts	86	63	10	23	64
Cashew nuts	72	17	20	59	17

Data from Food Processor SQL, Version 10.0, ESHA Research, Salem, OR.



# Dinner on a Budget

For this week, I have put together a collaboration of recipe videos that are perfect for college students, or anyone on a budget who is relatively new to cooking. I hope you enjoy!

