GRADS™

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MODULE 5.2

Fuel Your Brain and Sharpen Your Focus Through Nutrition
How does your diet affect your ability to concentrate? As I began looking into this question I was surprised to learn that the answers were based on simple principles that I had learned just a few years before in my biochemistry class. If you are not a biochemist, do not worry, you only need to remember the following simple principle: glucose (which is the breakdown product of carbohydrates) is the preferred fuel source for your brain. Therefore, your mind will function best when you maintain a steady level of glucose in your blood.

What is wrong with eating a snack that is high in carbohydrates, such as a pastry?

Rather than maintaining a steady blood glucose level, eating processed carbohydrates by themselves leads to a quick increase in your blood glucose, stimulating the production of the hormone insulin. Insulin tells the body to store excess glucose in the liver and muscles as glycogen, which pulls glucose out of bloodstream. Hence, a high-sugar snack stimulates insulin to remove glucose from my bloodstream, leading to fatigue and drowsiness again. To make matters worse, the excess calories from glucose are usually stored as fat, a consequence probably most of us do not desire.

What can you do to keep your blood glucose levels constant? The answer is “complexing,” or eating mixed meals. A mixed meal includes a balanced combination of proteins, fats, and carbohydrates. You can maintain your blood glucose level longer if you combine your carbohydrate source with some proteins and fats. Unless you are on a special diet, however, it is not necessary to precisely calculate the amounts of proteins, fats, and carbohydrates for each meal. Simply try to include some amount of each nutrient in every meal, including your snacks. Instead of a pastry, for example, I now eat a cup of yogurt and sprinkle just a few pieces of walnuts on top to keep me satiated for longer. Incidentally, walnuts are a good source of fiber, and have a high content of omega-3 fatty acids, which are thought to be important for brain function.

The first rule of thumb is: Combine proteins, carbohydrates, and fats in every meal and snack in order to keep you satiated for longer than if you ate only one type of calorie source.
While “complexing” will maintain your blood glucose levels better than eating only one type of food, it is still important to get your calories from healthy sources. Not all carbohydrates are created equal, and it is best to get foods in their most natural form. In general, the closer the foods are to nature the healthier they are. One of the primary benefits of eating non-processed carbohydrates (fruits, vegetables and whole grains) is that they have high amounts of fiber. Foods with fiber will keep you satiated for longer, and increase your alertness after meals. Another reason it is beneficial to include many fresh fruits and vegetables in your diet is that they have a high water content, which will keep you hydrated throughout the day.

Additionally, some nutritionists claim that including high fiber foods in your diet is one of the most important strategies for keeping a healthy weight.

_The second rule of thumb is:_

*Consume foods with high fiber content to keep you satiated and focused for a longer period of time.*

If you include fats in your meals you will be satiated for longer, but it is important to pay attention to the amounts and sources of fat in your meals. *What are healthy fat sources?* In general, fats from plants are unsaturated, which are considered healthier than the saturated fatty acids from animal sources. You can incorporate plant fats easily into your diet by substituting hummus or peanut butter on your sandwich instead of butter or cream cheese.

Fish, particularly salmon and tuna, are also an excellent source of omega-3 fatty acids. Fresh fish might be too expensive when you are a graduate student, but canned tuna and salmon, as well as flash-frozen fish, are more affordable and are available at most supermarkets.

*Choose your fats from plant (e.g. soybeans, olive oil, and walnuts) and fish sources (e.g. tuna and salmon).*

In addition to including healthy carbohydrates and fats, it is also important to have some protein at every meal. It is not necessary to have animal protein, particularly since plant-based protein sources usually have less fat and usually no saturated
fats. **Beans** and **lentils**, for example, provide a very lean source of protein and also contain significant amounts of fiber. Soy products, such as **soy milk** and **tofu**, also contain added calcium and omega-3 fatty acids. Interestingly, some Ph.D.’s recalled eating **rice** and **beans** to save money in graduate school, but they were actually eating healthier than if they had consumed fast foods at the local restaurants. If you eat animal protein, consider lean cuts of **beef**, **poultry**, **fish**, and **low-fat dairy**. **Eggs** are also an inexpensive source of protein, but they also contain fat, so you probably do not need to add extra fat (e.g. **cheese**) to satiate your hunger.

*Include low-fat proteins in your meals, such as lean cuts of meat, poultry, fish, beans, soy, and dairy.*

Snacking between meals is not a bad habit, nor does it necessarily increase your overall calorie intake. It does take some planning to ensure that your snacks are healthy, but in the long run you will save money and also eat better. *Examples of healthy and relatively inexpensive snacks include a high-fiber cereal bar, a yogurt with nuts and fruits, and whole wheat bread with low-fat cheese and sliced vegetables.* It might seem like a chore to try to eat healthy in graduate school when there is so much else to do. Putting a little bit of effort into your meals and snacks, however, can keep you focused throughout the day. It is common for eating habits to deteriorate when students are under stress, but this trend can be turned around with planning. A nutritious diet and a sharp mind go hand-in-hand: the healthier you eat, the more energy you will have, and the better your academic performance will be.

*Healthy snacks throughout the day can satiate your hunger and maintain your blood glucose level.*

Your health is influenced not only by what you eat but also by what you drink. When asked what the number one piece of advice is for people trying to lose weight, a nutritionist replied, “Don't drink your calories.” A friend of mine gained almost 10 pounds during the three months of writing her thesis, even though her diet was the same. I noticed, however, that she treated herself regularly to a fruit and soy shake. While examining the bottle, I saw that one serving had over 200 calories but the whole bottle itself had nearly 500. Most days she drank just one
bottle, but on days when she had to stay at work later she consumed a second drink. Thus, she was drinking an extra 500 to 1000 calories every day for three months, in addition to maintaining her previous diet. *I am not suggesting that you eliminate all sugary drinks, but you might be surprised to see how many calories some beverages have. Water is a much smarter choice.*

Water is a beverage that many of us take for granted unless we have no access to it. Katie, a biologist, was frustrated because the water fountains in her department looked unsanitary and she was frequently thirsty. She tried to get hydrated from the coffee machine, but too much coffee made her cranky. Katie and her lab mates decided to invest in a water cooler, and paid for water to be delivered every week. When Katie became a postdoctoral fellow, she was thrilled to tell her lab mates that her new department had a clean water fountain on every floor:

*Drink water throughout the day to keep yourself hydrated and your mind focused.*

I saved the discussion about caffeine for the last part because it is a sensitive subject for many people. Some students were advised by their doctors to cut down on caffeine, but this can be a challenge if you like to drink coffee regularly. Despite being young, I know several graduate students who were diagnosed with heart palpitations due to drinking too much caffeine. Quitting “cold turkey”, can lead to withdrawal symptoms and interfere with your ability to concentrate. If you decide to reduce your caffeine intake to improve your sleep or health, it is best to cut down on it gradually.

*If you think it would be beneficial to reduce or eliminate caffeine from your diet, talk to your physician about how to do it gradually.*

With all of the commitments in graduate school, it might seem difficult to eat healthy foods on a consistent basis. Fortunately, a healthy diet does not need to be complicated or expensive. *Just remember the following simple principles:*

- You can achieve steady blood glucose levels by eating mixed meals that are balanced in healthy proteins, fats, and unprocessed carbohydrates.
✓ Consuming fruits, vegetables, and whole grains as part of your mixed meals will satiate you for longer than eating processed carbohydrates will because they contain more fiber. Aim for 10 grams of fiber in the morning, 10 grams in afternoon, and 10 grams in the evening.

✓ Select low-fat sources of protein, such as lean meats, poultry, fish, soy, and low-fat dairy, and legumes.

✓ Choose healthy fats from plant sources and fish.

✓ Eating high-fiber meals will keep you satiated for longer periods of time. Stock up on nutritious foods and prepare snacks ahead of time, so that you do not need to rely on vending machines and convenience stores.

✓ Sugary drinks are high in calories, and will not quench your thirst as well as water.

✓ If you want to eliminate caffeine, reduce your consumption gradually to avoid unpleasant withdrawal symptoms.
Exercises:

Keep a food journal for one week, but maintain your current eating habits. Do you notice any patterns in your diet, and how it affects your energy and productivity?

I always believed that I ate a relatively healthy diet. After I joined a personal fitness group, our trainer asked us to send her our food journal after eating as usual for one week. The first thing that happened was that I immediately reduced the amount of unhealthy snacks (cookies, chips). It is one thing to “sneak in” a few cookies during the day, and it is another thing to have to record them in a journal that you send to a personal trainer whom you are paying to help you become healthier. Wow, I got healthier even before our first training session!

The second thing that happened was that even after I eliminated a few unhealthy snacks, I found out that my diet still needed improvement. As I went through my day I felt good about eating a few fruits and veggies with each meal. However, when I viewed an entire week’s food journal I began noticing patterns. For example, I noticed that I usually felt tired after eating meals such as meat and potatoes, and I felt more energy when I had lighter meals such as salads topped with lean protein.

After reviewing the tips in this section, what is one change that you can make in your diet to help you become healthier and have more energy?

Please see the shopping list for ideas on low-cost and nutritious foods that will keep you healthy, so you can optimize your productivity.
Quick and (mostly) healthy snacks from convenience stores:

You are hungry and the closest supermarket is miles away. Here are some ideas if the only source of sustenance is your local convenience store.

- High-fiber cereal bars
- Low-fat milk or yogurt
- Eggs
- Nuts or trail mix bags
- Whole wheat bread
- Some convenience stores now carry fresh fruits, salads, and sandwiches as well
- If you are craving salty and crunchy snacks, opt for pretzels popcorn or baked corn chips instead of potato chips

Perishable foods if you shop weekly at a supermarket:

- Fresh, in season fruits and vegetables
- Pre-washed and pre-cut fruits and vegetables (these are usually more expensive than whole fruits and vegetables, but you might be more likely to eat them)
- Low-fat dairy products, such as milk, yogurt, and cottage cheese
- Fresh fish fillets (vs. pre-frozen)
- Whole wheat bread with at least 3g fiber/slice (bread will keep longer in the refrigerator, and even longer in the freezer)

Longer-lasting or non-perishable foods if you shop biweekly or monthly:

Refrigerated:

- Milk (or milk alternative such as soy, almond, rice or coconut milk)
- Low-fat cheese (whole, sliced or shredded)
✓ Eggs
✓ Orange Juice
✓ Lean cold cuts such as turkey, chicken breast, and ham
✓ Tofu (sometimes you can buy it pre-sliced and pre-marinated)
✓ Hummus – if you like it, it makes eating vegetables so much more fun!

Frozen:
✓ Frozen vegetables and fruits
✓ Frozen entrées that are high in protein and low in fat (check the nutrition label for breakdown of fats, proteins and carbohydrates)
✓ Frozen ravioli/tortellini
✓ Frozen pizza (compare nutrition labels of different brands)
✓ Frozen meatballs (if you like turkey, it is healthier than beef)
✓ Lean cuts of meat, poultry or fish that you can freeze

Canned or dried foods:
✓ Canned fish, such as tuna or salmon
✓ Canned fruits (in juice rather than syrup)
✓ Canned vegetables and beans
✓ Dried fruits and nuts (make sure they don’t have additional sugar or oils)
✓ Dried beans and lentils

Other:
✓ Fruit and vegetable juices (also consider the small containers you can bring with you for lunch)
✓ Peanut butter
✓ Fruit spread with natural sweeteners
✓ If you eat sandwiches, consider mustard or a healthy mayo alternative (e.g. olive oil based) versus traditional mayonnaise
✓ Olive or canola oil for cooking
✓ Light salad dressing
✓ High-fiber cereal
✓ High-fiber cereal bars
✓ Traditional or instant oatmeal without sugar
   (consider the individual packets you can prepare at work)
✓ Ground flax-seeds to top cereal, oatmeal, and yogurt
✓ Whole wheat pasta
✓ Brown rice
✓ If you are adventurous with your side-dishes, also consider couscous, quinoa and millet, which are high in protein
✓ Whole wheat or high fiber crackers for snacks

Disclaimer: The suggestions in this program are not meant to be substitute for medical advice. If you experience symptoms of anxiety, depression, or repetitive strain injury see a medical professional immediately. Also consult with a professional nutritionist before changing your diet.
To receive maximal support from this program, please send your questions or comments about this Module to program@finishyourthesis.com.

I will announce the return deadline for each Module via email. This will help me to address your questions during the webinars.

*Remember that other students might be facing situations as you, and they will also benefit from the strategies that I will offer during the webinars in response to your questions.*