

Resources from the First Live Session with Nicole Vaudrin March 18, 2017

Resources

Check out the additional resources link to look into things in more detail on your own. This link is located across the top banner on your course page. These site will offer evidenced-based information on a range of topics.

They may not include much on more controversial or less-studied topics. If you feel comfortable to search through scientific journal articles on Google Scholar or PubMed or other such search engine, please do. Reading, properly interpreting, and placing the information in context is a skill and can be a challenge. Pay close attention to the study population and methods at the least.

The American Diet

Americans, on average, consume too much protein foods (meats, eggs, nuts) and grains and not enough fruits, vegetables, and low-fat dairy. Also, added sugar recommendations (so not that naturally found in fruit, cheese, or grains) is only 2-3 tablespoons (6-9 teaspoons), which people also often exceed without realizing it. For example there are about 2.5 tablespoons of sugar in one 12oz can of coke.

Ketogenic Diet

The ketogenic diet is controversial. The basis is to drastically reduced carbohydrates to below 20 g per day-or a little more than 1 servings of grains. It's also a high fat and protein. In this state, the body uses its glucose stores and then starts breaking down fats. The byproduct of this process are ketones-like acetate-that can build up in the blood, making it more acidic. If a ketosis diet is followed to the extreme -ketones may build-up so high it can lead to ketoacidosis- a potentially life threatening condition. Other adverse reactions to the diet include nutrient deficiencies-namely electrolytes like magnesium and potassium, hypoglycemia, stomach distress, and impaired cognition, among other issues.

However, if followed properly under supervision of a doctor, it can be safe and is mostly recommended for the treatment of epilepsy, especially in children, and has begun to be used and studied for obesity.

Paleo/Specific Carbohydrate Diet/ The Autoimmune Protocol (AIP) Diet

These diets can all be viewed together and are similar to a ketogenic diet. They are based on the idea of limiting most carbohydrates by cutting out grains and some starchy legumes and vegetables to mimic the diet of our paleolithic ancestors, before agriculture and industry and many current diet-related ailments like chronic disease and cavities. Cutting out processed foods is a very positive and healthy thing. However, the diet also calls for eating foods like meat and vegetables that are genetically quite different from those eaten by our ancestors, as well as limiting certain dairy foods that some humans developed a tolerance for after that time period. Physical activity and living conditions are also quite different. Perhaps most importantly, the diet is very restrictive, making it more difficult to get what you need from food alone or follow it for a long period of time. Some people do report feeling better when following this plan, however, possibly due to the focus on unprocessed foods.

Vegan/Vegetarian:

Dr. Johnson's talk on vegetarian diets is available under week 2-Nutrient Needs:Macronutrients. She discusses benefits and potential concerns of the diets. The nutrients she mentions that may be limited in a vegetarian diet are selenium and zinc (nuts are a good source), Vitamin D and calcium (leafy greens or dairy are good sources),

2 other nutrients to consider would be iron and B12- both linked to anemia. Good vegetarian sources of iron are Beans, including pinto, kidney, soybeans and lentils, Dark green leafy vegetables such as spinach, Fortified breakfast cereals, Enriched rice, Whole-grain and enriched breads. Combine sources of iron with vitamin C in the same meal. For example: a bell pepper-bean salad, spinach with lemon juice, or fortified cereal and berries.

Good sources of B12 include meat, eggs, dairy, and fortified cereals. Vegetarians may be at risk for B12 deficiency but it's a much bigger issue for vegans and another reason why they should probably take vitamins as recommended by Dr. Johnston..

Raw Diets

A raw diet consists of unprocessed, raw plant foods, that have not been heated above 40–49 °C (104–120 °F), including fermented foods.

If you look online people say this diet is good because, some antioxidants and vitamins are lost in the cooking process and the improved availability of these nutrients decreases inflammation. It also places a high value on fermented foods which can serve as probiotics.

While cooking can break down nutrients like vitamin C and B-vitamins, it also makes others like Vitamin K and iron more available. Cooking breaks down the tougher fibers in vegetables and grains, making them more digestible. Eating uncooked meats carries a certain amount of risk, especially ground meats. It would be very hard to get everything you need with raw foods alone but it is possible with diligence.

Gluten-free:

Those with celiac disease, which is a food allergy or autoimmune response to the protein gluten found in wheat, rye, and barley absolutely should follow a gluten-free diet to maintain health. This condition, however, is fairly rare. Some other people may have gluten intolerance. Food intolerances are less serious and not autoimmune responses but may result in stomach discomfort, like gas and bloating. There is great information yet again on the USDA food and Nutrition information center website on the diet. Be wary of gluten-free processed products and always read the labels. Gluten makes gives bread and cakes their fluffy texture. Being gluten-free doesn't mean products are healthy-in fact these foods may have more sugar and fat than products without gluten to compensate for the texture difference.

Detoxes/Cleanses

There is no physiological basis that a detox can actually pull toxins from your tissues. Toxins in the blood are filtered out through your liver and kidneys. Drinking plenty of water, limiting caffeine, alcohol, excess sodium, and sugar, and getting plenty of fruits, vegetables, and whole grains (so basically following a healthy diet) help your organs function well and things moving through your systems.

Along these lines, certain components of detoxes- like lemon juice- or in detox diets- like many plant based foods -have antioxidant properties that protect the body from damage done by free radicals. Without going into detail- free radicals are short an electron and antioxidants can donate an electron, making the free radical stable and staying stable itself. This way free radicals are unable to turn other atoms into free radicals, damaging cells which may contribute to cancer and heart disease.

Free radicals are sometimes formed in the body during metabolism or come from pollution, herbicides/pesticides, or radiation. Most healthy foods are good sources of antioxidants: like Vitamin C in fruits and vegetables; Vitamin A in red/orange FV, eggs, liver, and dairy; and Vitamin E in nuts, seeds, vegetable and fish oils, and whole grains.

These same foods also tend to be anti-inflammatory. Inflammation is been linked to an increased risk of cancer, heart disease, diabetes, arthritis, depression, and Alzheimer's disease. Less than healthy foods like refined carbohydrates, processed meat, and fried foods contribute to inflammation.

There is some evidence that skin conditions that result in inflammation, like eczema, may be triggered or helped by specific foods. There hasn't been much research so far - very preliminary. Probiotics, green tea, and plant and fish oils are currently being evaluated as helpful.

Detoxes may then have positive effects, depending how you do it. For instance, there is no evidence I could find that juice cleanses work and they tend to be very high in sugar. Some juice cleanses sold online have between 70 and 200 grams a day, nearly 3 to 8 times recommended daily amounts of sugar. Juicing in general removes the fiber from the fruit and vegetables. One job of fiber is to slow the movement of sugar into your bloodstream. Without fiber, you can get 'sugar rushes' and crashes as your blood sugar fluctuates. This is very dangerous for people with prediabetes or diabetes.

Cleanse teas often have Senna in them, which is a natural laxative. This will help you go to the bathroom but not more efficiently filter out toxins.

Superfoods:

Most things that people refer to as superfoods are fruits and vegetables. Eating foods from all food groups and from across the rainbow (red/orange, yellow/white, dark green, and blue/purple) of fruits and vegetables will ensure you get all the nutrients you need. I'm not aware of any kind of timing or other specifications to maximize the effect-the most important is to eat them. My general impression is that labeling something as a superfood is mostly just good for marketing. Eating plenty of fruits and vegetables of all colors should be good enough and won't require buying hard to find or expensive foods. For example, acai and goji berries aren't that different from most other berries (blueberries, raspberries, etc...).

Supplements

This is a large topic and can refer to many different things. You can look up specific questions on nutrition.gov. Before taking anything, please always discuss it with your doctor. There are 2 general types: Vitamin/mineral and herbal-Taking

a multivitamin might be a good idea to fill in the gaps of your diet if any exist from a poor diet, pregnancy, or being vegan, etc... Individual vitamins can be a concern, since taking one can interfere with the absorption of another - like calcium inhibiting iron absorption and zinc with copper- so take more care with those. Herbal supplements are things like teas, tinctures, and pills -like CoQ10, Dong quai, or St.John's Wort. There are many concerning drug- herb interactions- like St.John's wort can increase the effect of drugs with sedative effects and black cohosh may enhance the liver toxicity of certain medications. Many people think supplements are natural and harmless and won't mention them to their doctor but it's very important that you do.

Building Muscles/High Protein Intake

We will be discussing physical activity in Week 3. There are two different kind of muscle fibers- fast twitch and slow twitch. Fast twitch muscle are responsible for bursts of energy, like sprinting or lifting weights. Slow twitch muscles are good for endurance. You can build one type of muscle or the other, but it also has a lot to do with genetics.

You don't need to follow any specific diet or drink gatorade unless you're a bodybuilder, running long distances, or sweating heavily while doing physical activity for an extended period of time. Having one 8oz glass of chocolate milk or milk and a banana may help with muscle recovery after workouts, especially for those doing endurance exercises. Glycogen is carbohydrate energy stored in the muscles. The carbohydrate and a bit of sodium help replenish glycogen stores, electrolytes lost in sweat, helps with building muscle fibers. The ideal ratio is 4 grams of carbohydrates to 1 gram of protein.

Remember - your body can only utilize 1 gram of protein per kg of body weight for traditional protein functions - the structure, function, and regulation of body tissues and organs - including muscle fibers. The rest is converted into energy or stored as fat.

As mentioned earlier, most Americans eat an excess of protein as it is and food is generally more digestible than supplements, so there's generally no need to consume protein drinks. There are several types of protein powder - whey, casein, soy, pea, hemp, or brown rice. I couldn't find any definitive evidence of one being 'better' than another but they do have different properties. Whey is absorbed quickly and may help increase muscle mass and strength.

I am unaware of an amount of exercise that is considered too much in a day. It's generally recommended to alternate days of rest and resistance exercise to allow for muscles to repair and rebuild. Muscles do become damaged when used. You can hurt yourself by going too long, too fast. The best thing to do is start out slow and increase amounts over time. Where you start out will be different for everyone - depending on your base level of fitness. On the same note, long endurance sports like marathons and triathlons are safe if you train properly and have no underlying health conditions. Like with a diet that veers fairly far from the norm, it's best to check in with your doctor.

Metabolism

Losing weight by cutting calories and resistance exercise will help your muscles be seen by limiting the layer of fat under your skin. Be careful though - when you drastically cut calories or are burning much more energy than you're taking in, your body can go into starvation mode. Your body wants to hold on to energy dense fat and will actually burn some muscle first for energy. Slow and steady dieting combined with exercise will help you build muscle and lose weight without disrupting body systems. The slowed/more efficient metabolism created by an extremely limited calorie intake is part of why people tend to gain more weight than they lost after getting off a diet. Try using the SuperTracker app on ChooseMyPlate.com to determine how many calories and how much of each food group you need.

Also, I was unable to find information on specific foods that 'speed up' metabolism. Your metabolism is partly based on genetics and partly on how you feed yourself - see above. There is some evidence that small, frequent meals or

snacking (on healthy food) may help you stay full and make better diet choices and keep your body from going into starvation mode. I'd eat breakfast and not skip meals at the least for those reasons.

Fasting

Intermittent fasting is a growing trend and becoming a topic of research. Intermittent fasting is defined as not eating for up to 24 hours once or twice a week. Much of the research supporting the health benefits of fasting have been animal studies. Some have found interesting positive results for weight loss, insulin sensitivity and other biomarkers. The mechanisms are not well known and there's some debate over the results just being related to eating fewer calories. There's also some evidence that after a fast, some people binge which makes sense but defeats the purpose. I'd say be careful with this strategy to make sure it doesn't backfire.

Fat get deposits in specific areas

Like with muscle type, fat deposits in specific areas has a strong genetic component. Women generally have a higher percentage of body fat than men. Body fat content is around 20% of body weight, whereas in men it represents only 10% to 15% when at a healthy weight. Women are actually at risk for losing their menstrual cycle and all associated complications if their body fat gets below 8%. This is partly due to hormones. Estrogen, the female sex hormone encourages the accumulation of fat, especially in the lower half of the body. Fat is stored energy and the theory is that it was advantageous for our female ancestors to maintain an extra store of fat to support childbearing and breastfeeding. After menopause, many women begin to collect fat around their mid-sections, similar to what is commonly seen in men.

On a side note - there is no way to target where you will lose fat. You can strengthen your muscles in specific areas so that they will be larger and more visible. However, you lose fat in the reverse order in which you gained it. If you've had a tummy forever, that's going to be the last weight to go. -- so no need to click on those 'lose your belly fat' links.

PA and Calorie Trackers

Physical activity and calorie trackers can be great tools to hold yourself accountable. They often include alerts to nudge you in the right direction. The trick is to actually use and respond to them. It can be tedious to enter everything you eat into a calorie tracker, especially if you're mostly preparing your own food. Many have barcode scanners for processed foods and chain restaurant specific options. Type A individuals or those that are highly disciplined and organized may benefit most from these trackers.

Similarly, I started ignoring my Fitbit alerts when busy at work and started making them less frequent, so I was more likely to get up. It's good to check in frequently with yourself and make sure your healthy lifestyle strategies continue to be effective.

Environmental Factors for Health

An ecological approach to behavior change is based on all of us having multiple layers of factors influencing our behavior.

- At the individual level, it's all about education, skills, abilities, or stage of change.
- The social level is all about the influence of those around you. Are they motivating/supportive or bad influences/not supportive...or a bit of both?
- The environmental level refers to the influences on a higher plane. It's sometimes separated out into policies, institution/organization, and physical factors. Environmental influences would be access to healthy food or a safe place to exercise, public transportation, school policies that prohibit selling unhealthy foods on campus, a healthy foods billboard, or an office wellness program. On the flipside, living in a community with mostly fast food options, unsafe streets preventing you from walking or biking, and going to work where people constantly bring in baked goods are negative factors.

In public health we try to address various levels of influence and stop the focus on just the individual and education. That puts a lot of pressure on people and in many ways sets them up to fail. This approach tries to help create multiple layers of support to make the healthy choice the easy choice.

Sleep

We will be covering sleep in week 4. The National Sleep Foundation recommends the following amount of sleep by age category:

- Younger adults (18-25) and Adults (26-64): Sleep range is 7-9 hours
- Older adults (65+): Sleep range is 7-8 hours (new age category)

These sleep durations are determined based on studies related to health and physical performance optimization.

There is no definitive evidence that naps are 'good' or 'bad'. That depends on how you define those terms and the study you look at. If they make you feel refreshed, then I'd continue to nap.

Mental Health Links to Physical Health

We will be covering stress in Week 4 which touches on some of these concepts. Mental and physical health are linked in a number of ways -many that function as feedback loops, to contribute to your overall health spiralling in an upward or downward spiral. Physical activity raise endorphins which are hormones that make us happy and relieve stress. You may be more likely to decide to make dinner than go out after going for a run. Eating a balanced diet and drinking plenty of water keeps all of our other hormones in balance, again promoting a sense of well-being.

Feeling good physically and mentally can help with maintaining motivation for a couple reasons. Having a healthy outlook and mood is also for feelings of self efficacy. Self efficacy is a belief in your ability to succeed (or not) in specific situations or accomplish a task. If you're stressed and depressed, you less likely to believe (or want to work on) making healthy changes. Also, many people are emotional eaters. It can be tough to choose to go for a hike and eat what you

planned than drown your sorrows in cake - even if making the healthier choice may make you feel genuinely better than the .

These relationship is significant. Depression has been linked to the development of Type 2 diabetes and heart disease and anxiety to thyroid disease, respiratory disease, gastrointestinal disease, arthritis, allergies, and migraines - although the mechanisms are not always well understood.

There is something called the gut-brain axis. This refers to the biochemical signaling that occurs between the GI tract and the central nervous system. Your GI tract includes all the parts of the body food passes through on it's way in to it's way out. The central nervous system includes the brain and spinal cord. The type of gut bacteria (or your gut microbiome) you have can affect the signals your GI tract send to your brain and ultimately your health. Preliminary studies have linked a less diverse microbiome to risk of obesity and diabetes. What you eat, antibiotics, and stress play a significant part in the makeup of your microbiome. Eating a healthy diet with a mix of prebiotic foods (those high in fiber like tougher vegetables and whole grains that feed probiotics) and probiotics (from fermented foods like yogurt, some cheeses, sauerkraut, and kimchee) can be helpful.

Motivation-

Motivation is covered this week with the articles and videos in the 'Making it Personal" tab. We hope to build your motivation and support behavior change through the weekly challenges.

One important aspect of the weekly challenges is setting SMART goals. SMART goals are *specific, measurable, achievable, realistic, and time based) short-term and long-term goals. Defining these goals properly can be hard. Many people find it helpful to start off with small goals that you can easily meet- for example adding 10min of walking to day may be a bit place to start than setting a goal of working out 1hr a day at the gym every day. For some- the goal may be just to gain more information or talk to your doctor- anything that moves you further along in the process.

I can be helpful to look at behavior change as an experiment or process. You can identify something you'd like to change, like bringing lunch instead of buying it. Then take notes on what is happening in your lives to not accomplish your goal. Like, for example above- not thinking about lunch until the morning and waking up too late to make it. Then you can brainstorm solutions, choose one solution, and test it out. For instance, in the case above, someone could make all meals on Sunday, prepare lunch the night before, or wake up earlier. If you chose wake up earlier, then you could monitor how often you actually did and if that lead to you making your lunch more. If it didn't work, then you could try something else. This takes the pressure off making one large commitment and feeling like a failure of you don't reach it, as well as helping you understand yourself better which may be helpful for other life goals.

Overview

I hope from my responses you're starting to see a trend - there is unfortunately no silver bullet or right diet or exercise plan for everyone. For diet I like Michael Pollan quote 'eat real food, mostly plants, and not too much'. It's all about balance - and not just with food and exercise but also life balance. If following a strict diet and working out everyday for 3 hours gives you the body you want but you have no time for friends or family, leaving you feeling drained - maybe it's time to re-evaluate your plan.