

>> Okay. So how do we use these amino acids? We've eaten the protein in the food. we've digested it, absorbed amino acids. Now, what do we do with these amino acids? They're in our blood stream. And your body's going to, remember, use these. They're going to grab them to build new proteins. Remember, amino acids are the building blocks of the various proteins in your body. Some of it can be converted to sugar, to glucose and then to ATP if needed. Remember from chapter four, if you don't eat enough carbs, you skip a meal, you skip breakfast, usually, your body will then start breaking down muscle tissue to convert those amino acids to glucose for your brain. If you eat too much protein, more than your body can either use to make proteins or for energy, it will be converted to fat. More protein does not mean more muscle. You have to have a need for the muscle by, you know, lifting weights, et cetera. Okay. Don't worry about that. There's a few health claims about protein. The FDA allows a health claim stating that nuts help reduce your risk of heart disease. Remember, from last chapter, nuts have a lot of healthy monounsaturated fats and some omega threes. There's also a lot of fiber in them. So it does reduce your risk of heart disease. About an ounce of nuts pretty much every day of the week is associated with a decreased risk of heart disease. Try to buy the nuts, though. Read the ingredients of Planter's peanuts by the way and a lot of the other mixed nuts you buy at various stores, they add a vegetable oil and salt. And now, you're increasing risks. So, you know, my suggestion is either get them raw at Trader Joes or kind of cook them up yourself if you prefer them cooked, but try to not get the ones mixed with all the preservatives and vegetable oils. There's also a lot of antioxidants in nuts, which may help decrease your risk for cancer. Plant sources of proteins as opposed to the animal sources decrease your risk of several cancers, and that's because they have antioxidants and vitamins and minerals and fiber. So we're talking about vegetables and beans and nuts and seeds. Almonds, for instance, have a lot of calcium. So there's really a lot of health benefits of the plant protein. Now soy is very controversial. Years ago, there was a big push for soy, and a lot of health nuts were eating soy like it was going out of style. But the problem now is that, like I mentioned earlier, about 95% of the soy in this country is GMO. So it's really not the health food that we thought it was. So soy milk, soybeans, anything made from soy, soybean oil. If you look at the ingredients of processed foods, a lot of foods have soybean oil. It's cheap. It's subsidized by the government. They make cheese from soy now. It's just, you know, yes, the American Heart Association says it can reduce cholesterol levels because of the fiber in it, but there are a lot of much healthier foods that have fiber to reduce your cholesterol. It can slow bone loss. There are some substances of soy that helps your bones. Again, there's other healthier foods for that. It does have calcium. The biggest thing is years ago, they used to say it decreased your risk of breast cancer by blocking estrogen. I really need a board to show you how that is to write it down. But soy is what we call phytoestrogen. It is a plant-based estrogen. It has a very similar structure to regular estrogen in your body. Because of this, they used to think it blocks a lot of the other estrogen in your body that can cause cancer. When a woman gets breast cancer, or a

male for that matter, when a woman gets breast cancer, most cases, not all, but most cases it's because of too much estrogen in the diet and in the body. We get estrogens from BPA in our plastic bottles. We get estrogen from the animal products because they're giving some of the animals these hormones to make them bigger. So we then get it, and that's why girls nowadays are getting their menstrual cycle starting at eight or nine years old, whereas back in the '50s and '60s, girls were getting it maybe at the age of 14 or 15. So girls nowadays, you know, they go into menopause at 50. They have a lot more years they're exposed to estrogen than years ago. And the more estrogen they're exposed to increases risks of breast cancer. And that's why older women have an increased risk of breast cancer and, again, also because what they're giving the animals. We're getting a lot of estrogen that way. So they thought that soy, because it's a phytoestrogen, it blocked the estrogen from getting into the breast cells. The research on that now is controversial. Again, in fact, some research shows women should not eat soy, particularly if you've had breast cancer, because it can increase risks of breast cancer. And you never want to give your infant or baby formula made from soy because of the estrogen effects, whether it's a boy or a girl, okay. I know some doctors are still recommending it, but it is not a wise choice. You can Google that yourselves and see that information. And like I mentioned earlier, soy also interferes with thyroid functioning. So too much soy in the diet can cause some thyroid problems. I say stay away from it. But again, Google it for yourself. We went over this in chapter four. You definitely want what's called a protein-sparing diet. Know this for the quiz. This means sparing your protein, saving it. Save your protein by getting enough carbs and fat for glucose. So remember, you skip a meal, you skip breakfast, your body doesn't have the carbs, the sugars for the brain, and it's going to break down your muscle protein to amino acids, which then can be converted to glucose. So a protein-sparing diet means sparing or saving your protein, your muscles, by eating enough carbs. Remember, your brain, your red blood cells, all the nerves in your body, your central nervous system must have glucose. And if you skip a meal, you're going to run out if you go too long without eating, and you'll break down your protein. And keep in mind, too, that your body is always breaking down proteins. Your hair grows out. Your nails grow out. Your intestinal tract lining, the villi. Every three days, they break down, and you build up new villi. We break down a lot of protein every day. And you have to have enough protein in your diet to be able to build it back up, or, like I mentioned, that's when your body starts breaking down, either inside or outside. Your muscles break down. Your hair starts thinning and so forth. So you need to make sure you're getting enough protein daily. I mentioned earlier you need enough protein for fluid balance. We don't have this problem in the United States, but in third world countries, you'll see protein malnutrition where you have babies or young kids that are skinny, and they have huge bellies. That's edema. And that's because they are starving, and they don't have protein, and it's causing a fluid buildup. That belly is fluid buildup or edema. Are proteins also important for your acid base balance? You probably have heard of your body pH. And we want a neutral pH here. It goes from zero to 14, the pH in your body, and

seven is neutral. Well, when you eat a lot of animal products, a lot of meat, a lot of dairy, it makes your body more acidic. Your blood doesn't want to be acidic. And I'm not talking about your stomach acidity. This is your blood. Your blood becomes more acidic, and it wants to try to neutralize it. And how does it neutralize it? It will pull calcium from your bones, which is basic. It's more alkaline. Your blood will pull the calcium from your bones and neutralize or push this pH back to more neutral or slightly alkaline area. So one case of osteoporosis is eating over your lifetime, it obviously takes years and years, too much animal protein. These are people that eat meat and dairy a couple times a day maybe or every day. Your blood becomes acidic and then, again, causes your body to leach the calcium from your bones, which is more alkaline to push your pH back to a more neutral area. There are a lot of books written on this about alkalize your body. People buy alkaline water. There are alkaline water machines because your body functions better in an alkaline state. And now you see up here that more acidic type foods, white bread, meat, alcohol, beans and nuts to a degree, soda, sugar, dairy. And then you see the more alkaline foods are your fruits and vegetables, okay. So again, another reason to eat more fruits and vegetables, less of this stuff, okay, to stay more alkaline. Alkaline foods, here's some more: greens, all the greens here you can see. You've probably seen wheatgrass shots and greens powders. This is how you alkalize your body. It's way cheaper than buying an alkaline water machine or alkaline water. Again, acid-forming food. You got hamburgers, hot dogs, lunch meat, candy, cookie, sugar, alcohol, soda, white bread, noodles. Your more alkaline foods are going to be your fruits and vegetables, okay. And again, there's books written on this. You can Google it. It's actually very interesting. We need protein also for your immune system, I mentioned earlier, to make antibodies. To help infection, you need enough protein. So that's another reason. How much do we need? Again, we break down protein every day. So you need to have what's called protein balance, enough to counteract what we break down. Please know this for the quiz. You have positive protein balance and negative protein balance. Positive protein balance means you're eating more protein than you lose. And there are certain times in your life you may need to be in the positive, to eat more protein because technically, we need to be just neutral or balanced. But if you are growing, if you're a child, of course, you need more protein than you're breaking down or you won't grow. If you're pregnant, you need more protein to support the growth of your fetus. If you've been sick, colds, flus, or you've had surgery, you need more protein for a period of time to help your body recuperate and heal. And if you're weight training or very active, you definitely need more protein per day. So these types of situations, you need more protein than the average person. And we'll go over that. But you need more protein than what you're losing. Negative protein balance is you're not getting enough protein and maybe because you're sick, you don't have an appetite, you have anorexia, you're on a diet and so forth. That would be negative protein balance. How much do you need? Please know this slide. For most adults, it 0.8 grams per kilogram body weight. So you would figure out, take your pounds that you weigh. Let's say you weigh 200. Divide that by 2.2, and that's roughly let's

say 100 kilograms. Multiply that times 0.8. That would be 80 grams of protein a day. Or if you want to go by percent of your calories, 10 to 15% for most people, up to 35% of your calories if you're pregnant, growing, or an athlete. So please know this. And your book and your notes go over this. But your neutral [inaudible] will also show you how much you're getting. And keep in mind, you want to use a healthy weight as a reference. If you weigh 150 – No, no. Let's say you weigh 200, but you should weigh 150. Don't calculate your protein needs by the 200 because your extra fat cells do not need the protein. And you're just going to store more of that extra protein as fat. Okay. You know, everyone should be figuring out how much protein you need. If you're an athlete, like I said, you're lifting weights or whatnot, you're trying to build muscle, you definitely need more than the 0.8, maybe 1.2 to 1.8. It depends on how much you're lifting, how heavy, how many days a week. I teach more about that in a sports nutrition class. If you're interested in taking that, I teach that each fall in the Palmdale campus. This just shows you how much protein foods have. Here's an example of a small can of tuna. Three ounces has 21 grams. So that's quite a bit. Chicken, beef. So your animal proteins have quite a bit per serving. Yogurt. An egg white has a little bit. The egg yolk has a little. Cheese has, you know, a bit more. Beans and nuts have a little bit more, not as much as animal proteins. Quinoa has quite a bit. Hopefully, you guys have seen quinoa. That's quinoa. You can buy it in the store. It's actually a seed. They have a lot, a lot of protein. Fruit does not have much protein at all. Vegetables have a little bit, not much. Bread has a little bit. Here's some rice. Again, grains have some protein. Quinoa has a little bit more in comparison. Vegetarians, research does show that vegetarians do have lower rates of disease, but it depends how you do it. I've seen some vegetarians that are pretty heavy because they substitute protein with carbs, unhealthy carbs. And it looks like we're going to run out of time. Let me finish this chapter.