Good afternoon. Welcome to the February COPE webinar for health professionals. This webinar is entitled preventing metabolic adaptation during weight loss.

We're so glad you've joined us. Today we have 511 health professionals registered for the webinar today and we're thrilled that you're all able to join us.

My name is Lisa Diewald and I am the Program Manager for the MacDonald Center for Obesity Prevention and Education at Villanova University M. Louise Fitzpatrick College of Nursing.

I have the pleasure of being the moderator for today's webinar. Villanova is home to the first college of nursing in the country to have a center devoted exclusively to obesity prevention and education.

As the bottom of the slide illustrates, COPE's goals are to enhance nursing education and topics related to nutrition, obesity prevention and health promotion strategies to provide continuing education.

Programs such as this webinar on obesity and obesity related diseases for health professionals and educators and finally to participate in research to expand and improve evidence based approaches for obesity prevention and education in the community.

Before we begin the presentation, I would just like to remind our listeners that PDFs of today's PowerPoint slides are posted on the COPE website at villanova.edu/COPE.

After going to COPE’s website, simply click on the webinar description page for this month's webinar. Please use the question and answer section on your screen to submit questions for our speakers today. Questions will be answered as time permits, at the end of the program and we will leave about 8 to 10 minutes for questions. The expected length of the webinar is one hour. The session will be recorded and placed on the COPE website within the next week.

Just to note, if you use your phone to call into the webinar today. And want CE credit for attending the webinar, please take a moment after the webinar to email us.
The objectives for today’s webinar are to understand the methods of assessment necessary to design a nutrition plan for weight loss. Secondly, to create a macro nutrient prescription to fuel activity and preserve lean body mass while in calorie deficit. And finally, to design a sample resistance training workout designed for simultaneous fat loss and muscle growth.

Villanova University College of Nursing is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center Commission on Accreditation. Villanova University College of Nursing continuing education, COPE, is a continuing professional education CPE accredited provider with the Commission on Dietetic Registration.

Our webinar this month awards one contact hour for nurses and one CPEU for dietitians and DTRs. The suggested CDR learning need codes are 2070, 2110, 3030, 5370 and the CDR level of the webinar is 2.

Next I have the privilege and pleasure of introducing our speakers for today’s webinar.

Todd Miller, PhD is an internationally known weight loss and fitness expert and is director of the weight management and human performance lab at George Washington University’s Milken Institute School of Public Health in Washington, DC.

Dr. Miller’s research interests have included studies of exercise adherence in commercial health clubs, caloric expenditure during interactive video gaming in schoolchildren.
Stephanie Mull, our second speaker is a registered dietitian and board certified specialist in sports dietetics and is the lab dietitian at the George Washington University Weight Management Lab.

She earned her undergraduate degree in dietetics from James Madison University, as well as an MS in exercise fitness and health promotion from George Mason University.

Stephanie serves as adjunct faculty at American University in the School of Education. She is an expert in sports nutrition for athletes of all ages and levels, and specializes in optimizing body composition in athletic and non-athletic populations.

While we're preparing for the presentation to begin, I just wanted to mention that neither the planners, nor the presenters of this program have any disclosures to report.

Accredited status does not imply endorsement by Villanova University, COPE, or the American Nurses Credentialing Center of any commercial products or medical nutrition advice displayed in conjunction with this activity.

And with that, I welcome Dr. Todd Miller and Ms. Stephanie Mull to our COPE webinar program and I will virtually hand over control of the Mouse to them.
The conventional approach to weight loss is generally cardiovascular exercise, coupled with calorie restriction. And this is really nothing new. We've sort of, we all sort of know this.

So this is a picture on the left here, this is a picture of Stephanie walking on a treadmill eating Captain Crunch.

And I put this slide up here because one of the things that we're going to be talking about is the importance of monitoring calorie intake with less of an emphasis on food quality and what types of food you're eating, which is probably something that goes against the messaging that we're hearing right now in the weight loss world, but we'll talk about why we take that approach.

So if we look at exercise guidelines by the American College of Sports Medicine, the guidelines for exercise for weight loss.

And then you can read these here. I don't want to read them verbatim here but basically what the CSM guidelines say is that 150 to 250 minutes per week is adequate for preventing weight gain.

But more exercise is going to be needed to actually cause weight loss. And this is the case when dietary interventions are not undertaken. So if you're just doing exercise for the purpose of weight loss, you have to do more than 250 minutes per week in order for that to result in what's called clinically significant weight loss, which is a lot of exercise and it's more than what most people are ever going to do.

But we also want to sort of point out that the focus here is mainly on aerobic exercise. We look at the CDC guidelines.
it's vague in the sense that it doesn't tell you how much to reduce your calories
by, it doesn't tell you what you should be eating from a caloric perspective, it
doesn't tell you how much exercise you should be doing

So this is about metabolic adaptation. I just want to sort of orient you as to what
metabolic adaptation actually is. So

in this graph, we see that on the Y axis you have resting metabolic rate on the x
axis you have body weight.

And as a general rule as an individual gets lighter, their resting metabolic rate
falls.

So, and it's not surprising. I mean, lighter things burn fewer calories than heavier
things.

So the lighter someone gets, the more their metabolism falls and that's an expected
response. So this is the normal weight loss response as you get lighter the RMR falls.

Now what metabolic adaptation is is when the decrease in RMR is disproportionate to
the decrease in body weight.

So if you lose a bunch of weight, as I said, you expect the RMR to fall. But if the
RMR falls to a greater degree than you expect,

then that's metabolic adaptation and that's what we're trying to avoid because 70%
of your total caloric burn throughout the day comes from your resting metabolism. So
we want to keep that as high as possible.

Now, ideally what we want to happen, the ideal sort of response for the RMR is as
the body weight falls, we want the RMR to stay the same or go up. Okay.

And this is counterintuitive. A lot of people believe that this can't happen, but
we're going to show you that this can happen.
And what you need to do in order to prevent metabolic adaptation. So, you know, if you think about this response, this is if you imagine that someone has a resting metabolism of 1500 calories. If you can increase that by 20% and then make that 1800 calories, it’s much easier for that person to stay in a calorie deficit then if you had a fallen resting metabolism as the person got lighter. So this is what we’re trying to achieve. And the point of this webinar is to tell you how to achieve this.

So, you know, if you look at these two individuals here on the left is Paula Radcliffe, who I believe is still the world record holder in the marathon for women. And on the right is Nicole Wilkins, who is a very successful figure competitor. So the thing to recognize about these two athletes is they potentially, looking at them right now, they potentially could be at the same body fat in both of these pictures. But it’s clear that the person on the right has a significantly higher muscle mass than the person on the left. Okay. And from a metabolic perspective, we think that this is much, much a much better situation to be in because muscle is the metabolic engine that burns calories and the more muscle that you have, the more calories you’re going to be able to burn. So it sort of never really made sense to me personally, why aerobic exercise was pushed so heavily for weight loss. I mean, it makes sense from a mathematical perspective, since simply because you burn more calories per unit of time during aerobic exercise than you do resistance training but aerobic exercise is not effective at increasing the resting metabolism.

So you’re really only, you’re really only maximizing caloric burn during the exercise itself when you’re doing aerobic exercise. And when you’re doing strength training, you burn fewer calories during the exercise, but it causes increases in resting metabolic rate and that’s why we recommend it.

So this is the rationale. So again on the Y you have RMR, and let’s pretend that our
resting metabolic rate is 1500 calories. And let's say on day one we're going to do a weight training program.

So if we do a workout, and when, Steph will talk about how that workout needs to be designed, but let's say we do a properly executed workout and that workout leads to an increase, a temporary increase, in the resting metabolic rate. And you can see that the resting metabolic rate goes up, it increases and it stays elevated for about two days and then by the third day it's back down to baseline again.

Now the idea here is if we induce another workout on the third day, so let's make believe day one is Monday.

Day three is Wednesday and then day five is Friday. So if we work out on Monday, Wednesday, Friday, and we elevate that resting metabolism by 20 to 30%, the goal here is to change that baseline metabolic rate so that we're actually moving the baseline metabolic rate to a higher level. So now, you know, if we can increase the baseline metabolic rate by 20% through weight training, we're now burning 1800 instead of 1500. And as far as cardio, we're generally telling people that cardiovascular exercise is optional. And if you are going to do it, then do two sessions of cardio on the off days, we don't want to do too much cardio because one of the things that happens as a result of doing a lot of cardio is it tends to cause you to lose muscle. If you do a lot of cardio and you get lighter by losing fat and muscle, that exercise is now easier to do because you're lighter and it's easier to move you down the road, for example, if you're 130 pounds than 150 pounds right? So if cardio is telling us to get rid of muscle and we're doing strength training that's telling us to add muscle we're sending two different signals. We're sending competing signals to the
body. These are competing adaptations.

We don't want to do that. We don't want to confuse the body as to what it's going to do. So we want strength training to be the primary form of exercise with cardio being the option.

This is completely different from what you know, professional organizations promote from an exercise and fat loss perspective but again we're interested only in fat loss. We're not interested in muscle loss. Okay. And this is what you need to do in order to prevent that from occurring.

So let's talk a little bit about lean mass and obesity and you know that obesity is characterized by high muscle mass and this is confusing for a lot of people, because people believe that.

Obese people generally have lower muscle mass. Well, that's not true because the heavier you get, the more you have the more muscle you need to move that extra weight around so.

Obese people generally have very high muscle mass, but it's low muscle quality. The function of the muscle isn't great, there's a lot of intra-muscular fat.

So while there's a lot of muscle there, it's not necessarily the best quality muscle and in overweight people 20 to 30% of weight loss during a weight loss intervention comes from fat free mass. This is what the published research says, but the question is really

is that loss and fat free mass obligatory? Does it have to happen?

We have demonstrated in our clients that it doesn't have to happen, it really shouldn't happen.

So this graph shows changes in fat mass and fat free mass in 60 of our clients. So what we did was we wanted to track our clients and see how many of them actually lost muscle, along with losses and fat. So every pair of bars on here is a person. So you'll see that each individual has a green bar and an orange bar and everybody on this graph.

In order to be on this graph, you had to lose a minimum of eight pounds of fat. So if you lost eight pounds of fat, you're on this graph if you're one of our clients.
And the green bars represent the amount of fat that's lost and the orange bars represent the amount of lean mass or fat free mass that's gained.

And you can see that the average fat loss was almost 15 pounds, 14.6 pounds, and the average fat free mass gain was 2.9 pounds. So, out of these 60 people only 15 of them, or 25%, lost fat free mass. Now, keep in mind that all we did was yank the folders of everybody who lost eight pounds or more. We didn't check to make sure that these people were actually eating the dietary, the macro prescription that we prescribed and we didn't check to see that they were doing the resistance training program that we prescribed. So, of those 15 who lost fat free mass, we don't even know if they were listening to what we were telling them to do.

The point I'm trying to make here is that even in the absence of checking those things, you still have 75% of these people who increase their fat free mass while they lost significant amounts of fat.

You look over here on the right side of the graph. Here's a person who lost 40 pounds of fat but gained almost 10 pounds of muscle and you know those results, it's very, very rare to see those kinds of results because usually when people lose that kind of weight some portion of that is muscle so we try and emphasize to everybody that the ability to preserve muscle is at least as important as the ability to lose fat.

And I think the overwhelming majority of people who approach weight management do not look at it that way. All they're worried about is getting somebody lighter and that's I think the kiss of death when it comes to weight loss.
So the first thing we do with every client we work with is we measure the body composition and this is an individual lying on a DEXA scan here and you can see that the reason we're so interested in body composition is because measuring weight in and of itself has such a little utility.

When it comes to really determining whether or not your weight management intervention is effective. So here we have an individual who, this is three weeks basically, we put this, we measured this individual, they came in three weeks later, after we told them what to do.

And you can see that what I've circled over here in red is their fat free mass. You can see that that went from 101.3 to 104 and if you look here on their fat mass, they actually lost about a pound of fat, and I don't have that circled here. Let me see if I can, if I can do this.

If I can do this. But, so here, if you look at their fat pounds they only lost, they lost a pound of fat and gained three pounds of muscle. So their percent fat, they had a 1% decrease in fat while having a two pound increase in weight. So if this individual was only looking at their weight in three weeks if they gained two pounds they're going to say this isn't working, when in reality it's textbook. It's going exactly the way we want it to go: decreases in fat, coupled with increases in muscle. So measuring body composition is the first step.

The next step is measuring the metabolism. I'm sorry about this red circle over here that's supposed to be over here. So, here.

If you see, I'll draw a circle around the measured resting metabolism. This person has a resting metabolism of 1680 calories per day. So you can see she's sitting over here- this is our COSMED metabolic cart, and she'll sit here for about 15 minutes and we'll measure the amount of oxygen that she's consuming, convert that into calories and then extrapolate that to 24 hours and that's how we get the RMR.
You'll see that her predicted value here is 1481 so she's about 13% faster than predicted. So we're using this resting metabolic rate value in order to come up with a calorie prescription. So you may have heard about, you know, using prediction equations and things like that and Stephs going to talk about sort of the, the pitfalls of that but the reason we want to measure the RMR is because remember that when we're talking about weight loss we have to be in a calorie deficit. The single most important thing, really the only important thing, when it comes to weight loss if all you care about is getting lighter than you have to be in a calorie deficit. So we not only care about being in a deficit, because we want weight loss, but we also want that weight loss to come from fat. So this is really why you need both measurements of the RMR and the body composition, because you need those two pieces of information in order to come up with a usable macro nutrient and calorie prescription and that is what Steph is going to be talking about from this point on, so you're on deck.

You're on deck.

So I like Tom said, I'm going to be taking you through some of the practical applications with the nutrition management piece to preventing metabolic adaptation. So this slide works us through some prediction equations for estimating caloric need.

And I'm not going to go through all of the numbers. What I need you to take away from this information, and for those of you who are on the phone, I'll walk you through it.

The important thing to understand is that there is a lot of variance when it comes to estimating caloric need including estimating metabolism through prediction...
equations and estimating energy expenditure. So the typical approach would be

128 00:22:52.170 --> 00:23:06.360 okay, let's estimate basic metabolic need. let's estimate the RMR. On this slide, we work through one individual using the Mifflin equation and then the Cunningham equation because we do have

129 00:23:06.990 --> 00:23:11.850 body composition data on this individual. And this is a man, just so you know.

130 00:23:12.480 --> 00:23:25.080 And then we have the measured RMR and then we work through different energy expenditure predictions. So lifestyle and the thermal effects of food we estimated a certain caloric

131 00:23:25.320 --> 00:23:30.930 need there and then TEE is the thermal effect of exercise and we used a range

132 00:23:31.620 --> 00:23:36.930 for that to just estimate again caloric need. Then on the bottom section of this graph, we use an activity factor. That's what a lot of our training

133 00:23:42.000 --> 00:23:52.200 in the dietetic world involved is let's estimate with a prediction equation, such as Harris Benedict or Mifflin, and then let's use an activity factor or stress factor

134 00:23:52.740 --> 00:24:03.870 and then we subtract to get our deficit. If you are using these different methods with prediction equations and estimating

135 00:24:04.560 --> 00:24:07.770 energy expenditure through lifestyle structured exercise,

136 00:24:08.430 --> 00:24:18.750 this data that we work through gives you a range of 1400 calories. So this individual could need anywhere from 2400 calories up to 3800 calories.

137 00:24:19.110 --> 00:24:32.160 That is a huge, huge range. And so when we're estimating and predicting there's too many places where we can go wrong. There's too many places where there's error or variance

138 00:24:32.730 --> 00:24:37.530 and so the more we can measure the more specific we can get dialed in.

139 00:24:38.160 --> 00:24:56.250 And on this slide, you can see the measured RMR and this guy's actual caloric need when we go through and really understand what his lifestyle and energy requirements are with structured exercise. Again, the point is there's a lot of variance with predictions.
This is a scatter plot and this is really to show you, or convince you to never use a prediction equation again. Alright, so these are 50 of our clients where we just randomly went through and picked out RMR results from clients in our lab on 50 people.

And the red line showcases what the predicted RMR would be and then each blue circle represents a client and the number inside the blue circle represents the percent deviation from the prediction. And you can see that it's all over the place. There's actually more people above the red line are below.

As health professionals, we can get really, really good at estimating certain things by sight. Right? We can look at someone and estimate a body weight. We can look at someone and estimate a body fat percentage. We can look at someone and estimate their height.

We cannot look at someone and estimate their metabolisms. You just can't. It's like looking at someone and estimating their cholesterol level.

You have to draw the blood, and assess the cholesterol level. So this needs to become standard practice for caloric need, metabolic need. We need to be measuring the metabolism because there is too much variance.

And if you measure the metabolism to understand what someone's unique caloric need is then you are going to be giving them that customized, individualized nutrition plan that they need to elicit fat loss to see results.

Alright, let's walk through a client example. So this is Kia. Kia is a 45 year old male who had come to see us and he is 6'3", 325 pounds when he first started with us.

We're going to work through if we had predicted his caloric needs. So his predicted RMR was 2,742. If we add in an activity factor...
and then subtract 1,000 calories to support two pounds of fat loss per week, his target calorie intake would be 3100, just over 3100. That’s if we predicted everything and then supported fat loss with the caloric deficit.

When we measured Kia’s metabolism, his actual metabolism was 2,168. So his metabolism was 21% slower than predicted. So we gave him a calorie prescription of 2,100.

And looking at Kia you wouldn’t have guessed that his metabolism was that slow because he was a big guy, 6’3” 325.

But his actual metabolism was 21% slower. So his prescription was 2,100 and Kia kept awesome food logs for us. So we had really, really good data on him.

His average calorie intake over six months was 2,122. Remember that if we were using predictions his target would have been 3,113 so that difference was 991 calories.

If you correct for what he actually lost, he actually lost 28 pounds of fat, and then you add in the surplus, he actually would have gained 29 pounds of fat instead of losing 28.

Again, this is just to show you with an actual example of somebody that if we had predicted, especially in someone who has a slower metabolism, what would have actually happened.

So these are Kia’s outputs. And again, you can just see his fat loss. He actually grew almost nine pounds of lean mass. So his body composition results are beautiful. Again, they’re exactly what we would have expected to happen.

Well, what I want to point out is the change in metabolism. So we remeasured his RMR within six months and it went up.

So not only is Kia 28 pounds of fat lighter, his actual metabolism, so his absolute number went up to 2,214

and his relatives, so his percent predicted also improved. He’s now 15% slower, instead of being 21% slower.

So, Kia, you know, would have been the perfect candidate to be metabolically adapted because he would have
been eating in this huge calorie deficit. He already had a slower metabolism but we preserved it. We actually improved it in six months, and obviously he’s not done yet he’s still working.

So this is how metabolic adaptation occurs from just a step by step process. The first issue is the size of the calorie deficit.

We have clients come into our lab every single day and they’re frustrated and they’re desperate.

And they sit down and they go through their story with us and they share everything they’re doing and everything they’ve tried in the past, and then they sit there and say to us, just tell me what to do. I will do anything. Just tell me what to do.

And they will. They’re a rule follower. That’s what they say "I’m a rule follower". So their mindset, number one, contributes to the size of the deficit, because they restrict their calories and they move more, eat less, move more.

The ideal size of the calorie deficit should be between five and 700 calories a day.

And that is based on everything we have experienced and researched and assessed in all of our clients over the years. Anything greater than 700 calories a day is going to set somebody up to lose muscle.

So the mindset contributes to the size of the calorie deficit. If we’re predicting the RMR and we’re underestimating it- if someone has a faster RMR than the predicted and we feed them below then we’re further contributing to the size of the deficit. And if someone is doing cardio as their primary form of exercise that also compounds the size of the deficit. That sets people up to lose muscle.

Losing muscle then contributes to the slowing of the metabolism. You throw in the compounding factor of not eating optimal dietary protein and we’re further exacerbating the whole process. That is how we get somebody metabolically adapted.

Alright, so let’s go through the nutrition planning. From a calorie perspective, our
A general rule is to feed males at the RMR or up to 10% above.

I could go spend a whole hour discussing why that is, but in the essence of time I’m not going to go into that kind of detail. But this is what we have:

Learned and kind of fine-tuned over our years is males go at the RMR or up to 10% above.

Females are going to go at the RMR are up to 10 to 15% below.

Females have a tendency not to burn quite as many calories through the day as males, which is why there’s a little bit of variance.

We will not go 20% below the RMR. So I will tell you that there is a huge gap in the literature in terms of the size of the deficit and what’s ideal. You know how far below, can we feed someone below the RMR?

And it really hasn’t been identified in the literature. However, what we’ve experienced in our lab is that when we go too low, the client is going to lose muscle and therefore the metabolism is going to slow. There has to be enough energy to support the muscle tissue.

If we are meeting basic metabolic need, meaning we’re feeding right at the RMR, then we’re going to let that energy support metabolic need and metabolic demand and let the deficit come from lifestyle, activity and structured exercise. That’s how we create the deficit.

Some things to consider when you’re trying to identify a calorie prescription is what is someone’s current intake? You know, if they’re eating 3,000 calories and their RMR is 1,800, that’s going to be a huge shift. So try to work in stages by just pulling the calories down so a person can get adjusted.

If someone is eating 800 calories and their metabolism is 1,800, with the same reasoning, you don’t want to just jump them up by 1,000 calories. Work in 200 calories stages until you get someone to their goal.

Another consideration...
is their lifestyle activity. So how many calories do you think they're going to be
burning through their lifestyle? Someone who has a desk job, who's sedentary all day
is going to burn a lot less calories than someone who is on their feet, such as a
nurse in a hospital setting or a construction worker.
And you know someone who is moving around constantly there's going to be a
difference in how many calories they're burning.
Their structured exercise, so if you have someone who works out every day let's say
for two hours a day because they're training for something or they're they're an
athlete,
then you need to factor that in. If someone is doing no structured exercise, then
that is a consideration and you can't bank on them burning more calories
through that structured exercise. So you might want to go just a little bit below
the RMR to try to create that deficit.
And then the amount of fat loss
that someone needs is also a consideration. So if someone has 100 pounds of fat to
lose
you can afford to put them at the higher end of your deficit target, meaning we can
shoot for closer to a 700 calorie daily deficit which means we can maybe feed them a
little bit below the RMR.
If someone needs 15 pounds of fat loss, you're going to want to feed closer to the
RMR to make sure we're getting enough energy to support the muscle tissue. So the
quantity of fat loss that someone needs to lose is also a consideration.
All right, so let me give you an example, real quick with some calorie prescriptions that we've given our clients.

So here are 10 clients, 6 males, 4 females and the initial RMR range for this group was 21% slower to 18% faster. Six of them were below predicted.

We fed all 10 of these clients within 9% of their RMR. One of them,

he was given a calorie goal within 9% of his RMR, but he actually couldn't eat it. So his food logs showed him consuming much less than that. He actually ate 19% below his RMR.

When we repeated the RMRs in these people, they improved. All of them improved except one, which I'm going to show you here on the next slide, but the relative RMRs now we're 15% below predicted to 37% faster and only two were below the predicted level.

And this graph represents that so each pairing of bars is the initial RMR and then the repeat RMR.

And the one client who couldn't eat within his calorie range who ate 19% below has RMR had a decrease in his repeat RMR.

Everybody else's metabolism improved. You can see that represented in the red bar graph. There's an improvement in every single one, except the one who couldn't eat his calorie target.

Okay, so that's the calorie prescription component. Let's talk about the macro nutrient balance. I'm going to go through each of the three macros and just briefly and tell you how to balance those because that matters. So fat for all of our clients- we give 20% of their calories coming from fat. And the reason is because fat is so calorically dense so it makes sense to pull the fat down in the diet and give the low end of the AMDR.
so that we can free up calories to create the calorie deficit. We also need to make sure we're eating enough carbohydrate and protein, which I'll explain on the next couple of slides.

But I also want to show you that there is a lot of fat present in food and the messaging today is you have to eat fat to burn fat, and we want to add heart healthy fats.

The problem is there's not clear messaging to guide people for how much is appropriate for them. So people interpret the messaging as more is better.

And there's all these extra sources of fat present throughout the diet on a daily basis.

Let alone the fat that we find naturally in food and all of a sudden, we've got somebody who is consuming a lot of their calories from fat and then they're eating pretty much in a calorie surplus because those fat calories can send them into a calorie surplus very easily. And this picture here,

and I'm fully expecting you guys to be like she's crazy, is to show you that you can have an avocado that's 250 calories, but pretty much all fat, it's giving you 23 grams of fat

compared to a Snickers bar that's 250 calories, but only has 12 grams of fat.

The Snickers bar will give you carbohydrate. Yes, some of it is sugar. It's also going to give you some protein. From a macro nutrient perspective in two iso-caloric foods they're very different. The Snickers bar, if you take your emotion out of it for a second, the Snickers bar is more macro nutrient balanced than the avocado is.

If you are eating in a calorie deficit, then those macronutrients play a role. They play a very, very important role.

And so it's just something for you to consider as you listen to clients and you hear the messaging and the interpretation of the research today to understand the quantity of fat that people are actually consuming in their diet.
So for protein, protein is an incredibly important macro nutrient to prevent metabolic adaptation, because it helps support the muscle tissue while eating in a calorie deficit.

And we use a range of 1 gram of protein per pound of fat free mass up to 1.4. We try to give everybody 1.4, the upper end of the range because the more protein we can give, the greater we're going to support the muscle tissue. However, you do not want protein to be greater than 40% of the calories, because then we're displacing carbohydrate and carbohydrate is our fuel which we are going to review on the next slide.

But we don't let our clients consume more than 40% of their calories from protein. So find the range that based on fat free mass that works for your client within their calorie goal.

You want to focus on lean proteins because they are going to give you the most protein with the least amount of fat so it makes hitting the macro nutrient targets with the lower fat prescription, a little bit easier.

Our challenges in people are vegetarians and vegans. So with plant protein, the quality of the protein is lower. It's also more challenging to get direct protein sources, or protein only food sources.

It can be done. We do it all the time, but it just requires more intentional planning from a nutrition perspective to make sure you're getting the protein and without overconsuming carbs or fat.

We support supplementation and they're usually necessary for most people. This means things like protein powders and other protein supplements, so that we can get the protein prescription in. We support even distribution of protein throughout the day so distributed between meals and snacks that again supports a positive nitrogen balance it gets consistent stream of amino acids in there while we're eating in a calorie deficit. Again, that's supporting the lean muscle tissue.
Now with carbohydrates. I don’t think anybody would argue with me that there are demonized and we use carbs to fill in the rest of the calories and carbohydrates, glucose, supports the energy requirements and the metabolic need. They are not the devil nutrient that we hear that they are. You know, these are some of the things that we hear from our clients that they don’t eat certain fruits because of the sugar load or they’ll, you know, only eat sweet potatoes and quinoa, but they’ll never eat bread or pasta because they think they’re too carb-dense. And really what this demonstrates is a lack of nutrition knowledge. It’s a lack of understanding what exactly is in our food in terms of a macro nutrient content or quantity and what the related portion is. And so this is where we have to do a lot more education to really help people remove their emotion and look at food for just what it is. What is it provide you? How much protein? How much carb? How much fat? And how can I fit that into my plan?

So we encourage food tracking for all of our clients because it’s necessary for long term compliance and success. If you give someone a macro nutrient prescription within a calorie prescription and you tell them to go hit that without food tracking, they will not be able to do it. They will not be able to hit their protein target and keep their fat down. They’ll be too wrapped up in their head with the ideas of what they think they’re doing instead of what they are actually doing.

And here was an article published at the end of last year by Kevin Hall and his team out of the NIH that basically just showcases the bias that food tracking is critical. And there was an article published at the end of last year by Kevin Hall and his team out of the NIH that basically just showcases the bias that
comes with the self reporting of intake. And essentially again, in the essence of time, I just want to show you that

00:44:55.860 --> 00:45:03.870
look at the three bullet points at the end-clients were told to stay in a 500 calorie daily deficit. At month three,

00:45:04.470 --> 00:45:13.440
Kevin Hall, when they measured their body composition actually showed that the participants were in an 800 calorie daily deficit.

00:45:14.160 --> 00:45:23.940
By month six that deficit had shrunk down to 279. Again the participants were told, and thought they were in a 500 calorie daily deficit.

00:45:24.300 --> 00:45:42.420
By the end of month 12 they were in a 65 calorie per day deficit. So as the year went on their deficit shrunk down.

00:45:43.410 --> 00:45:51.120
They still thought they were in a 500 calorie daily deficit, but

00:45:51.390 --> 00:46:08.940
their behavior and their body composition shows otherwise. So food tracking is incredibly important to keep someone dialed in, and on track to their prescription and it again just prevents any deviation from their plan.

00:46:10.770 --> 00:46:20.610
So let's go through monitoring really quick. We have one client example who we love to talk about. This is Mary and Mary is 43 years old.

00:46:21.600 --> 00:46:39.690
She came to us in July of 2017 at 189 pounds and 38% fat and she came to us because she really didn't know what to do. She was uncomfortable. She was miserable. She never allowed pictures of herself to be taken. She hid behind her clothes.

00:46:40.830 --> 00:46:50.280
She was unhappy, and she was over fat. She needed to improve her body composition. Her metabolism at that point was 6% slower- it was 1,558.

00:46:53.520 --> 00:47:15.630
In October of 2018, so we're a little over a year into this, 15 months, Mary is now 157 pounds at 17% fat and her RMR is now 1771. It is 21% faster than predicted. So Mary,

00:47:17.040 --> 00:47:33.240
I mean there's just no words. I mean, the picture tells it all. The average calorie intake for the first eight months for Mary was 1556 and again she kept great food logs for us. She still does. After that, because Mary got hungry, her metabolism improved,
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00:47:34.320 --> 00:47:46.380
her calorie intake went up to 1957. Over those 15 months, Mary lost 45 pounds of fat and gained 13 pounds of muscle doing no cardio.

260
00:47:47.130 --> 00:48:07.560
She exclusively resistance trained and she was the type of person who was terrified to go into the gym. She's told us stories now about how she would sit in her car for like 20 minutes and pep talk herself into just walking into the gym because she was terrified people were going to be staring at her and judging her.

261
00:48:08.130 --> 00:48:18.780
But she did it. She committed to it and she did it and she got in there and she learned how to become comfortable. Well, I mean, comfortable in the environment and has had absolutely outstanding results.

262
00:48:25.500 --> 00:48:32.640
So how do you reassess the calorie goal? Because I'm sure that's one of the questions you're asking yourself is how often do we measure the RMR?

263
00:48:41.130 --> 00:49:03.390
So there's some things to look at. We don't have a set plan for when to remeasure the RMR, it is highly individualized.

264
00:49:03.810 --> 00:49:15.300
Some things that we're really looking for is what the client tells us. There are some signs and symptoms of an increased RMR. Those are things, it's usually hunger, but we'll also see things like poor sleep, if they're getting fatigued during their workouts, if the fat loss starts to slow down, and/or if they start to lose muscle.

265
00:49:15.990 --> 00:49:28.530
Or if they're having cognitive changes - things like poor memory, difficulty concentrating, especially in the middle of the afternoon.

266
00:49:28.980 --> 00:49:34.920
All of that's kind of different from what their normal is.
Or we start to see fat gain or again slowed fat loss. So we encourage retesting the RMR at least once a year, but do it more often if you start to see any of these things.

And so what I’m not saying directly is that you really have to be remeasuring the body composition at regular intervals.

That’s critical. You have to remeasure the body composition at least every 8 to 12 weeks to be assessing for those composition changes—fat changes and muscle changes.

And that’s going to help guide you as to when to be retesting the RMR and how the nutrition would then need to change, the nutrition prescription.

This is a decision map for RMR reassessment and this is going to be on the website in our slides. So you can utilize this to help you work through the decision making process of what to do with someone and hopefully this is a practical tool.

And the reason why I share this is because the daughter is just looking at mom. She’s doing what mom’s doing and she’s looking at her and they are lifting weights.

And our kids, you know, if we’re going to solve this obesity thing that we have going on, our kids model our behavior, they model our language, they model our self talk, they model our behavior. And so we need to change that culture so that our children can then follow in our footsteps.

That is it. I did good.

Okay, we can take questions.

Okay, thank you.

And Todd is still here. He’s just over there.
Okay. All right. Before we get to questions, just a couple quick things. Remember to look for an email containing a link to an evaluation. It will be sent out in the next couple days and this will be what we use to send you your CE certificate. Try to complete the evaluation within three weeks because it will expire after that point.

Upcoming free continuing education webinar for next month, Dr. Elizabeth Venditti from the University of Pittsburgh School of Medicine will be talking about behavior change to prevent chronic disease: psychology in action. And this actually is a nice companion piece to what we talked about today because there certainly is such a synergy between behavior change methodologies and the type of information we learned today and how to apply it. Okay, we do have several questions. So I'm going to kind of go quickly and use the time that we have allotted to pick the most common questions that we saw.

Thank you both, by the way. You did a superb job and obviously by the interest level and the number of questions we received we know that your topic is of great relevance to us. Basically what we're hearing is probably something that you hear all the time- is there less expensive device to measure RMR in clinical practice or is there even a device available for home use so that people can take advantage of this service much more readily?

Yeah, there are, but most like most things when it comes to metabolism testing the more inexpensive the device, the less accurate it's going to be. So I would say that.
if you're not using something, we mentioned the core, which is about $5,000 (for) the core review. Another thing that people will often ask us about is Med Gem. Med Gem is a handheld way to measure RMR and they're just not very accurate and

the problem with these things when you're talking about RMR is if the thing is off by 100 or 200 calories it screws up the prescription because if your calorie prescription is off by 100 or 200 calories that could very easily mean the difference between whether you're in a surplus or a deficit.

And that's why we just don't trust the prediction equation. And I know that it's an expense to move up to actually measuring RMR but if you only have to do it once or twice a year, and if you can, you know, most places it's 100 bucks or less.

You know, that is something that is doable. It's just not standard practice, it's not widely accepted so there's pushback. And we think it should be standard practice so

I think that instead of asking the question, or I don't think we should ask the question

"what is an alternative to measuring our RMR". An alternative question should be "how do I get to make sure that I can measure the RMR?". It could be that even if you can't

swing having your own device, we help people find places to get tested all the time all over the place. So there's not anywhere in the country where you can't find someplace that's within an hour to drive away to get a metabolism tested, even in the most remote places.

I also want to point out that if you do something like Embody or a Bod Pod for body composition, it will say RMR on there. They are using a prediction equation. That is not the measured RMR.

The measured RMR requires you breathing into a mask or tube. Yeah, if you're not breathing into something you're not measuring the RMR, you're predicting the RMR.
Okay.

Just a practical question, what would somebody, this is something that we would advise for our clients, but what would they actually look up if they were trying to find a location for RMR measurement? Are there some easy search words or database of...

I usually just put in somebody's zip code and Google for resting metabolism test. You want to put resting metabolism testing not metabolism, because then you're going to get hits for like blood work.

You want to do resting metabolic rate testing and then the location. And the easiest thing to do is if you're near a university and that university has an exercise science department then they do metabolic testing. They may not do it for the public, but they have the equipment to do it. So a lot of times they won't advertise that but if you just call or email the exercise science department and say hey do you do metabolic testing for the public and I'm willing to pay for it, they'll say yeah we'll do it. Sometimes they do it for free. In fact, a lot of times they do it for free or for like 25 bucks so it's definitely findable.

And there are more and more commercial places that are doing these testings that are that are popping up all over the place. Okay, that's helpful.

Question about protein recommendations- if someone is in the maintenance phase, they've gone through the workout, they've achieved their goals, what are the protein recommendations based on fat free mass?

once they're in the maintenance phase as opposed to...

They're the same. I mean if you pull the protein down a little bit you're just risking losing muscle. The only way to know is if you try pulling it down
and then measure the body composition and see how someone responds. And we have people who I give the protein prescription and they just simply cannot tolerate it. They have too many GI side effects.

or they just simply can't eat it and it's not sustainable. They have to be heroic to hit their protein requirement and we don't support that. We want sustainability.

so we will just keep titrating the protein prescription down until we get it to a place where the person can realistically hit it and then we keep them there.

Okay.

Okay, great. And speaks to I think something that probably most of us have been thinking when somebody is in that mindset that cardio is absolutely

the most important and resistance training is seen as the condiment to the meal, how do you talk to them in such a way to, I hate to say, but to convince them of the strong benefits of resistance training when they are so resistant.

Well one of the most effective ways to do that, that most people never do, is point out how ineffective cardio is for losing weight.

So if you look at actual published studies, meta analyses, where they've looked at cardiovascular exercises as a weight loss intervention.

when those studies are pulled together the actual fat loss that occurs or weight loss that occurs as a result of aerobic exercise is really not very good.

in terms of how much weight you think, it's something like two kilos or something like that. So it's very unimpressive and underwhelming if you look at the actual effectiveness of aerobic exercise.

Resistance training and fat loss is also not very impressive, but that's because exercise in general is not a driver for fat loss. I mean diet is the driver for fat loss, not exercise and...
as long as you put your eggs in the exercise basket, you're going to be disappointed. Regardless of what that exercise is, because if you do weight training instead of cardio, but your diets not dialed in, you'll build muscle underneath your fat and you'll just get bigger. So,

I think we have to start moving away from the mindset that exercise is really critical for fat loss because exercise is good for, like we said, preventing weight gain, but it's not really a great mechanism for fat loss. So instead of saying I need to do cardio to lose fat, we take the approach of we should do resistance training to gain muscle and manipulate the diet to lose fat.

Okay. Thank you. And being able to help people overcome the resistance to trying something new is something that we all do all the time and constantly appreciate new ways to go about it. So thank you. I have to thank the two of you so much for this wonderful presentation.

I think it speaks to not only all the good work you're doing down there, but also all the great importance of RMR and making it more available to our patients and clients. So thank you. Thank you so much. Lastly, we just wanted to let you know once more that we encourage you to sign up for upcoming webinars and continuing education programs that we have here at Villanova. You will be receiving your CE certificate as long as you fill out the evaluation.

We're so pleased to be providing these continuing education webinars and we're so grateful to Dr. Miller and to Stephanie Mull for shedding some light on a real interesting and important topic. So with that, we're out of time. We thank you for participating in the COPE webinar series and enjoy the rest of your day. Thank you. Bye.