Exercise Physiology- Part 11

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OK, some of the principles of exercise prescription-- actually doing, filling out an exercise prescription. The program factors-- frequency, intensity, time-- so you can see in your notes, it says duration instead of time. And it says mode instead of type of exercise.

If you want to set up an exercise program, if you have these four factors, you can work out a program for anyone if you just remember these four factor-- frequency-- how many times a week are they working out? Generally for a lot of, like strength and conditioning, twice a week, they can maintain three to four times a week to really improve.

If you're talking about cardiovascular, some of the recommendations, now, ACSM, is, they'd almost want them to work out every day for 30 to 40 minutes. And if it's not a workout, just some sort of increased physical activity. But if you talk about actual cardiovascular training, if you can get someone to work out three to four times a week, you're doing a great job.

Intensity-- how hard they'll work. Now, this may involve how much weight they lift. If they're doing resistance training, if they're doing cardiovascular training, how hard should they work? And we discussed the heart rate.

Now, for a lot of patients when you start talking about heart rate and maximum VO2, they're not going to have a clue as to what you're talking about. So what we do is, if you want to give them a good guideline as to how hard they work, it's what we call conversational exercise.

In conversational exercise, if they're working out, if they're sweating, but they could have a conversation with the person next to them without being out of breath, they're probably working a very good heart rate. And surprisingly, a lot of times, this does match up to 60% to 70% of the maximum heart rate.

That's how most patients can handle it. That's something they can follow. For those of you work out of the gym, everybody-- do people workout regular? A lot of times we're always hit with that January crowd that comes in after the new year. It's starting to thin out now.

But it's kind of a double-edged sword. They come in January, and I can't get on the treadmill. And they got these people who don't know what they're doing on the weights. And the reason why it's a double-edged sword is because I know they won't be there in February and March.

But you know what-- secretly, I'm hoping they will, because we would be so much better off if people would keep up with this. So there's a bit of a personal sacrifice. I have to go in later to use everything. I want that type of thing. But it's like year in, year out.

I know they're not going to be there in March that right now, they've already started to thin out. But you're just hoping they will. You hope that somewhere down the line that the word is getting across that they've got to keep this up.

The time-- how much should they do, OK? If you're talking about cardiovascular duration, I think if you can get them to 40 to 60 minutes, that's great. But starting off with 20 to 30 is really good. Now, let me talk about some my older patients.

When it comes to time-- and some of my older patients had a workout. Maybe they have claudications. They have trouble. They have a stenosis. And you'll find a lot of patients that you dealing with can't walk for 30 to 40 minutes. They can't run. They start getting into pain.

So what you want to do with them is interval training, all right, where we used to do with track athletes you do with patients. And the whole idea behind this is, don't let him get into that painful range, because when they get into that painful range, usually, they start having problems that's hard to overcome.

So if they can go 30 minutes, and that's when the pain starts kicking him, have him cut back down to maybe 15 to 20 minutes, stop, stretch, rest, do something else, and then go back and try and do another 20 minutes. So you try and increase total time. But you break it down into two or three intervals, so they don't end up ever reaching that painful range. And we've had some really good success with that.

Mall walkers do very well with that, because there are always plenty of benches. So that works well. If they all work, get home a treadmill. I have a number of people who do have their own treadmill or Stairmaster. I limit them to 15 or 20 minutes and then tell them, OK, now, you get off.

And now, you stretch for five minutes, or you do some of the core exercise-- the bridging exercise, and then go back on it, finish another 15, 20 minutes. So that's how you can adjust the time a little bit, and then the type or the mode of exercise.

If you want someone to keep up with an exercise program-- and really, that's what we're looking at-- compliance-- if you want someone to keep up with an exercise program, make sure they're doing an exercise that they like, not one that you like.

Just because you like running doesn't mean they're going to like running. If you like skydiving, doesn't mean they're going to like skydiving, all right. So you got to figure out what they like. And then you talk to them. Sometimes they don't even realize it.

The other thing is, now, do you want them to exercise the way they like? Hopefully, you can find two different things that they like so they can alter it. Specific case-- you have a 60-year-old who needs to lose weight, get into shape. They have arthritic knees.

OK, so if you're talking about them walking and running every day, you're going to have a problem. So what would they do? Swim. But they can't just swim, because let's say it's a 60-year-old woman, she has some osteoporosis issues. And if she just swims, that won't stimulate bone growth.

So she's going to have to do some exercise, weight bearing. So this is a person where one day they walk, one day they swim. And they alternate that three or four times. OK. Now, let's just throw in a little bit of a just a little bit of a curve on that.

They've swam at one day. The next day, they come up. And they'd say, time to walk a bike. But their knees really hurt, OK. So they're in an inflammatory period. What should they do? Well, their choices are, is they always have to be able to modify, because you don't want arthritics working out during an active inflammation.

So the choice is just to do swimming until it clears up a little bit or maybe to do more of an easy workout, something that, for example, the biking may not hurt the knees. Or they focus more on a stretching program that day and take it easy. So they need to know when they can and when they can't workout, especially with the arthritic patients.

They have to understand not to try and work through active inflammation-- to back off a little bit and pick up with it when the inflammation clears up a little bit-- very much so-- very much. There are therapeutic pools that really are a big benefit.

If we look in this area, the Courage Center is a therapeutic pool. I think the pool here at the school is somewhat of a therapeutic pool, but not totally. They've kind of reached a compromise, because you have a number of younger people who are using it for lap swimming. And you don't want to lapse swim in a therapeutic pool. It's too much.

But we've seen a tremendous benefit in people who are working out in the warmer water where they do a much better job. OK. I recommend that all athletes should swim at least once a week-- do the freestyle. And the reason why for a lot of runners, basketball players-- swimming, the flutter kick is the exact opposite biomechanical force on the knee than running and jumping.

You kind of get a little bit of that extension. I use it for myself. I have the knee problems. And at least once a week I find-- I'll try and run two or three times. And I start to feel stiff. I'll get into the pool. I won't go along.

Maybe I'll just swim 800 yards or something like that with a flutter kick. And I get a great relief from that. Part of it might just be-- it's kind of an endurance-- a leg endurance in a different manner, nonweight bearing that seems to help. But I recommend that highly.

Now, it's in the concept of designing the exercise program. And this will be just a little bit out of order from what you may see. And you notice I don't think so. But the number one principle

when we talk about training is the overload principle. You must overload the muscle in the tissue if you want it to strengthen.

We just look back a little bit when we talked about the muscle physiology behind it. And the fact that you're actually tearing and doing some damage so that you can get the area to repair stronger, that's what we talk about with the overload principle. You're not going to get stronger if you don't overload.

Now, the DeLorme technique is a system of overloading, which was developed with World War II veterans. DeLorme and Watkins were working in a veterans hospital. And they needed a way of coming up with, how can we progressively increase the resistance so the soldiers can get strong when they rehab?

And they came up with this technique. And the DeLorme technique involves three sets of an exercise. What they do is they first determine, what is that patient's 10 rep max? How much can they lift 10 times, no more, no less?

So they start off with a 10 repetition maximum for a specific exercise. Let's say that they're doing bicep curls, and they find the 10 rep max is 100 pounds. Their first set then when these guys would exercise, their first set would be 50% of their 10 rep max.

So they would start off doing a set-- 10 repetitions of 50 pounds. The second set would be 75%. And then the third set would be 100%. So what would happen is, if they could lift 100 pounds 10 times as a 10 rep max, they would do a set of 10 and 50, rest a second set at 75.

So when they tried to do that third set of 10 rep max, they were already fatigued. So they wouldn't be able to complete the 10. They might only get to seven or eight. And that's how they would get the progressive overload.

When they worked out a couple of times over a week or two period, eventually, they would reach the 10 rep max, even though they did two previous sets. And they would know that's the time to increase the weight. So that's how they did the progressive resistance exercise.

Now, interestingly enough, in the actual notes if you look at the rehab procedures that they did in the veterans hospital when they were doing this, they would do this sometimes five, six times a day for the soldiers. They would lift five or six times a day with rest. They weren't just lifting once a day.

And lifting five, six times a day-- is there a problem with that? Not if you have proper recovery and rest you can do that. The Bulgarians-- a lot of their weight trainers, they used to train heavy three or four times a day. But then they would sleep and rest in between, OK. The body is capable of doing that.

Now you may see a term called the Oxford technique-- Oxford technique. And all the Oxford technique is, is reversing the DeLorme technique. So you would start with a 10 rep max first at 100%, then go to 75%, then go to 50%.

Now, with the DeLorme technique, you can do your 10 rep max testing. But let's say you do the test with 100 pounds. And when they do that third set, they can only do three or four repetitions, you've probably overestimated what that 10 rep max is. You'd probably have to bring it down. And that can occur during the testing sometimes,

Now, the specificity principle-- and if you look, it's the SAID principle. You'll see this often called the SAID principle-- specific adaptation to impose demand. And what that says is if you have a specific goal in mind, you have to do that. If you want to teach someone to run fast, you know what training they have to do? They have to run fast, OK.

They have to increase their frequency of their turnover. If you want to sprint it to run faster, you're not going to do it by putting them in a weight room five times a week and not practicing their running, OK. A number of different ways of doing this-- for someone who wants to run faster, if you want to increase their frequency, you can have them run downhill. OK, gravity will make them run quicker.

Now, you have to be careful with something like that, because what happens if you-- if the decline is too great, they'll end up using a lot of their strength to prevent from falling. So they won't be able to stretch out.

So you see a lot of cross-country runners, especially the most effective cross-country runners are the ones, who can run the downhill strong, who don't decelerate to keep from getting too fast, who can keep their balance and just fly down those hills, OK.

If you find that hill training is too much, you can always take your athlete-- you can wrap a rope around their waist, attach it to a car, hit a certain speed. And they have to keep up with the car speed. And that will also force them to run quick.

Now, one reason I mentioned it is because I heard that was a technique that was used with boxers at one time, OK, that they actually did that. Would I ever subject myself or even my enemies to something like that? No. All right, I think that's getting a little carried away with training techniques. All right?

Now, for increasing speed in frequency-- sometimes, you'll find that they'll use uphill. you can use any variation of running where I've seen them get a tremendous amount of success. I don't know if any of you have seen the industrial treadmills. Have you seen some of those and some of the Minnesota acceleration?

A couple of these places have treadmills that go up to 25 miles an hour. I know the incline goes up to 25%. The standard incline on most machines and the health clubs are 15%. On these industrial type treadmills, you can get up to 25%.

And I think you can get a speed up to-- let's see-- it might be 20, 25 miles an hour. What they found is, biomechanically, when you're running uphill, it very much imitates a lot of the sprinting biomechanics. So they're having a lot of the athletes who are looking for speed doing treadmill running.

And not only if they doing that, seeing they have the treadmill, I believe, for skaters also. They have almost like something that mimics ice skating where they're doing treadmills that way too. And that seems to be very effective. And I've worked with some people with that. It's not as easy to do on-- for example, if the Y and place like that, I have worked with it, a couple of athletes-- high school athletes with speed work.

And what they'll do is, they'll get on the treadmill. And we'll set it. And generally the treadmills in the health clubs only go as fast as six-minute miles. They don't go quicker than that, all right. So the maximum you get is a six-minute mile at 15% grade, which is still a pretty good intensity.

So maybe what they'll do is, they'll go on it, and they'll run on it for 10 seconds. And then they'll rest 40 to 50 seconds, then do another 10 seconds. And they have to do a series of maybe 15 repetitions.

So the specificity principle-- once again, we've talked about, for example, when I talked about the heart patients who were being retrained-- if you train their legs, but you don't train their arms, and that's what they're going to use, they're not getting any benefit to their arms if they're only on a treadmill walking.

So you're going to have to take care of that too. And that's the specificity principle-- the detraining principle. As much as we get into shape-- you stop training, you're going to fall out of shape. There is a de-conditioning principle. If you talk about-- it seems that the aerobic conditioning goes first.

But let's say you got sick and had the flu and had bad fluid, bed rest for almost, like three weeks, like 20 days, they've done studies-- you need to lose about 25% of your aerobic capability. All right, almost 1% per day or greater of your aerobic capability with rest of sickness.

Now, can you get it back? Yeah, you can get it back rather quickly. Apparently, you lose the aerobic more than the strength. So if you went back into a gym and tried lifting, you might even be able to hit some of the levels you had been hitting before. You don't lose as much with strength. And you can certainly get it back. But you do lose.

What they notice is, in terms of recovery from an illness like this or recovery from detraining, let's say you're someone who trained for a long time. And then two or three years, you've just stopped training. When you go back to it, the fact that you had a history of training-- does that help? Yes, it does seem to help.

And if you've gone through a couple of cycles-- train, not train, train, not train-- it does seem to help every time you trained again. That does seem to make a difference in your recovery. The overtraining principle-- you can't overtrain. One way is through a monotonous programming.

OK, these are people who just train constantly and don't change things up. And they can definitely overtrain, metabolic overtraining. They can start feeling fatigued. Some people who run every day-- five, six miles a day-- for a couple of years, even when they're not feeling well, they go through this type of monotonous programming.

And you can't have a sympathetic overtraining or a parasympathetic overtraining, OK? If your sympathetic system is overworked, the people tend to be irritable. They have trouble sleeping. Their heart rate-- resting heart rate is actually elevated-- anxiety.

If they have a parasympathetic type of overtraining, what happens is, they're fatigued. They're listless. They sleep longer periods. Their resting heart rate decreases. They can't predict which one you're going to suffer from. No one seems to know.

But they do know that the nervous system is trained with exercise. You have a huge effect. Some people feel-- I've read some of this that, in fact, one of the reasons if you're dealing with people with fibromyalgia or people with a lot of muscle spasm, they seem to always have a facilitation almost like a hyperactivity of their muscles.

And if you can bring them under a greater parasympathetic tone, you can take care of some of this soreness. And how would you do that? Exercise would probably be the best way of doing that-- cardiovascular exercise. You start getting the decreased heart rate, the decreased blood pressure at rest. And it might be that coming under more of the influence of the parasympathetic tone, that may help with some of these chronic pain conditions.

Overwork, short-term or long-term-- overwork, short-term. Athlete doesn't train in the off-season. They go into camp. They pull a hamstring. Long-term, they can start breaking down too, physiologically, especially if they're not using recovery methods.

And we already went over a lot this-- single set system, we discussed-- multiple set system. We didn't discuss the pyramid system, which is just a system of increasing weight as you decrease the repetition. OK, so you may start with 10 reps at 100, then go to eight reps of 60. I'm not sure if that's in your notes either.

We talked about the circuit program's multi-poundage systems, split routine exhaustive set system working to failure. Let me just see if this is-- in the exhaustive set system, what we'll do what we call negative stripped down sets where they'll lift the part.

And you'll lift. You'll do as many reps as you can, take off the weight, do as many reps as you can with that weight, take off a little more weight. With the exhaustive set system, machines work very well for that, because it's very easy to just change a pin. If you want to do exhaustive set system on machines, that's a very good option.

Close kinetic chain strength training-- we really should talk about the kinetic strength training. And the concept behind closed kinetic chain is that everything we do-- a lot of the sports performance we do-- it comes from the legs. If you're throwing a ball, it still comes from the leg.

So the idea of an athlete just training upper body without training the legs at the same time is wrong. And a lot of this comes from the biomechanical work of Stengler, all right. Now, granted, sometimes, people try and make it just seem very simple closed and open kinetic chain.

It can be tough, because generally the definition is closed kinetic chain is with the feet touching the ground-- terminal point. So a leg extension would clearly be open chain. A squat would clearly be closed chain, OK. So when I ask, well, what if you're working on a hip sled, where you're pressing up? OK.

Your feet aren't fixed, but your back is kind of fixed. We have some trouble with that. And part of the problem is that the original open and closed kinetic chain comes from Stengler, which is really more of a biomechanical model and not a biological model, OK.

But in general, closed kinetic chain-- so if we look at a pitcher, and when we were talking about pitchers on the break-- if you're training a pitcher for strength, you worry about their arm strength. Where does that power come from? Comes from the legs and from the core.

So instead of doing, for example, sitting down and doing dumbbell presses, it would make more sense maybe do a push press where they hold the weight here. Instead of just pressing up, they dip down and use their legs to drive it up. So in closed kinetic chain, even when you're training upper body, you're trying to train it together with the lower body, because that's how you usually use it in sports.

I don't know what kind of training you would do for luge or for skeleton. All right. You're sliding down on a cafeteria tray with some metal. I don't know what kind of training that would be. I just know I admire them. [LAUGHS] That's some incredible stuff.

And when you look at them, I mean they are definitely-- has anyone gone down-- I've gone down on a bobsled. Now, let's talk about special age to performance, OK. The pharmacological agents-- and first, what we'll talk about steroids.

And I would just want to talk about steroids, in general, because the steroid issue-- I mean, it's still primary in a lot of people's minds, especially with everything that happened in baseball. The interesting thing is, all the anecdotal evidence says, steroid use is rampant. All of the hard scientific research says, there's not that much steroids usage. OK.

The truth probably lies somewhere in between there, OK? And when you look at the hard research-- and the research actually changes. Before 1985-- mid '80s and late '80s-- the hard research where athletes were filling out questionnaires showed a lot greater steroid use at that point.

And then if you look past '85 and past the mid '80s all of a sudden, the steroid usage dropped, even though, anecdotally, it looked likes went it up. And apparently at some point, the athletes got scared about answering the surveys correct.

So there is a difference between the actual numbers that we're probably seeing and what's being reported. And let's face it. Some of the best chemists work with some of these designer steroids. I think they're getting better. I think for the first time, we're seeing a concerted effort to really get rid of the drug issues and the steroid usage.

I think that what we were playing lip service. And if you look at the United States Committee, how many of our athletes went to Sydney with positive drug tests that they just said that were labeled incidental use-- accidental use? OK. A number of gold medal winners, which are being investigated now.

Unfortunately, I think we're considered one of the dirtier countries when it comes to international competition, the US, all right? So it's interesting. Is it true or not true? It's hard to gauge. I mean, there's obviously a lot of usage out there. So I just want to bring that up. It's still an issue.

Now, growth hormone is an agent that has definitely been on the upsurge. You can see it advertised everywhere. And if you want to, it's interesting, because they all seem to quote the same research paper. In 1990, a lot of the people who were selling this stuff are quoting this paper.

In this paper, they noted with supplementation of growth hormone that you had an increase in protein synthesis, that you had changes in the bone structure, an increase in bone structure, even skin changed. You had an improvement in skin-- really was a very good research article-- was done in men in their ages, 61 to 81. OK?

Now, they're quoting this paper. What they're not telling you is that the authors themselves said that this only worked for a third of the men and only in those who were deficient in growth hormone to begin with. Anyone who had over certain levels, normal levels, had no change that the supplement did nothing. OK.

This is the classic carbohydrate loading scheme, OK, before a race-- a week before the race. So this first stage one is the depletion stage. Carbohydrate loading is based on the concept of super compensation-- that if you deplete one of the systems and then overload it, you can actually have more than you originally would.

OK, day one, an exhausting exercise performed to deplete muscle glycogen in specific muscles. OK, so if the race is on Sunday, you might do this on Monday or the Sunday before. May 2 through 4-- low carbohydrate food intake. So you deplete your glycogen with an extreme exercise, but you don't let your body have what it wants yet.

Stage two is where you do a carbohydrate loading. Day five through seven-- high carbohydrate food intake, normal percentage of protein. And then on competition day, you have a high carbohydrate-free event meal. OK, and that's the classic carbohydrate loading. Now, let's see. I want to see if I have this-- bring this back a little bit.

What happened is, they've changed the classic. And a lot of people use a modified carbohydrate loading, because what they found is this first stage to depletion, the low carbohydrate intake was just too much for many of the athletes. It was very hard. It was irritating.

So what they did is, the modification is, they still do the intense exercise. But instead of going to the low carbohydrate, they go to a normal carbohydrate intake. And then they'll increase the carbohydrates later in the week. So they never go to that severe starvation of carbohydrates.

What do we learn? If you deplete your carbohydrates for two or three days, what's going to happen? You're going to have trouble even using your fats, right, because you don't have that carbohydrate flame. So you're going to be fatigued. You're going to be cranky. It is a tough condition to be under.

Now, environmental stresses and the physiological adjustments of altitude-- when we talk about altitude, a lot of it has to do with dehydration with altitude. And the problem is that most people who have problems with this are skiers on weekend trips.

The weekend or the long weekend skiing trip is an example of everything you should not do from a physiological standpoint, because one, you can't acclimatize, all right. You get in there, and you're ready to ski. Two is, you're dehydrated. But how many skiers-- when they get in, the first thing they start doing is drinking.

So you're talking about not being acclimatized. You're talking about increasing your dehydration and often, exercising to levels that you're not prepared for. A lot of people do not do any kind of pre-trip planning or pre-trip conditioning, so most everything you do.

Dr. [? Hink ?] will get into further details on a lot of the altitude. If you're interested in some of the effects on exercise-- your VO2 uptake in muscle strength-- that generally decreases until you're acclimatized. OK, hypothermia, obviously, dehydration and rehydration is a major issue.

I will draw your attention to this, because I'd like you to know this. And then Dr. [? Hink ?] will cover it in greater detail. But this is a key point in here. When we talk about thermal stress, we're not just talking about heat. We're not just talking about humidity. We also have to worry about the heat from radiation. And there's something called-- when we look at this-- called the wet-bulb globe temperature that you should at least be familiar with. And this is sometimes how you can determine whether the environment is too hot, OK? And if you look at this equation, I'll just give you what it means.

The wet bulb is actually-- and sometimes they have what they call a sling psychrometer. It's an instrument they use where you actually swing it in the air. One aspect it is, there's a bulb there that's covered by a wick, a wet wick, which helps measure how quickly it's evaporating.

It's a globe with a temperature. That will give you the wet bulb temperature-- globe temperature. Then you have the dry bulb, OK. And the dry bulb is just that, just a regular temperature in there. And it's a combination of the wet bulb and the dry bulb that gives you your actual stress. Let me just pull that back for a second. There is also a globe that's painted black, OK. And that helps figure out what the radiation temperature is-- how much radiation you're getting from the sun on that day. So this takes into account radiation, humidity, and temperature all in one and comes up with a value. And that can tell you whether or not they can exercise or not.

Signs and symptoms of dehydration-- I'll go over this quickly also. 0 to 2% of body water loss, you will not have any signs or symptoms. That's how much you can lose. 2% is a key value. I'll come back to that in one second. 2 to 4% of body water lost, thirst, loss of appetite, verbal complaints, and reduced movement. You want to catch these athletes before they go above 2%. And one of the things that we did-- and I did this with the college basketball team I was working with.

You weigh the athletes everyday when they come in, OK? Let's say you have a 200 pound athlete, right? They have a workout. They were 200 before. They don't have their sneakers on-- 200 pounds. They have their workout. They come in the next day. No matter how hard that workout is, is it possible they lost three or four pounds of fat the day before? That would have meant, if they lost four pounds of fat, that meant they burnt 14,000 calories in the practice before. It's not possible.

So if they've lost four or five pounds, a lot of that significantly is water weight. So if they were $200 the day before, and they came in at $195, it means they did not rehydrate properly. They're probably at a greater risk of injury. So they were not allowed to practice.

These basketball players-- if they came in, if he was a 200-pound athlete, and he came in, and he didn't weigh at least 196 on the same scale, he was not allowed to practice, right? This is how we were able promote proper rehydration after practice, because nobody wants to miss practice time. You miss practice, you miss game time. So this is how we're able to promote rehydration.

OK. So remember that's 4% to 6% of body water loss. Now, you're starting to get flushed skin, apathy, impatience, weariness, tingling sensation. 6% to 8%-- and now we're really talking in terms of medical emergency when they're losing this much water loss-- cotton-mouth, headache, dizziness, indistinct speech, shortness of breath, blue coloration, and skin and lips-- sounds very similar to a stroke.

And 8% to 12% body water loss, spasticity, delirium, wakefulness, swollen tongue-- serious condition. We'll go just the concept of hypothermia defined as condition where the core temperature's 95 degrees are below. Going back to that, just something you should know is, wind chill index has changed over the last couple years.

The change is, that no longer measuring from 30 feet in the air. Right, wind chill index basically is almost, what temperature would you feel if the wind was blowing, and you had no clothes on, all right, at 30 feet up. So they've changed that. So now it's chill is, I think just off the ground, maybe five or six feet off the ground.

So you'll find if you look at our wind chill factors here, versus five, six years ago they, might be slightly warmer. I don't know if there's a big difference between having a wind chill of 30 below or 50 below. I'm not sure that's going to make a difference to us. But you should know that wind chill levels will be lower. All right.

So this is pretty much the exercise physiology portion. Now, I want to wrap it up a little bit. Office management and approach to fitness-- how you could possibly use this-- if you wanted to use it in your office, some of the standard test that you could use-- the Par-Q is a good test to have if you're having someone start to work out-- just run them through a Par-Q or a screening for yourself. Right?

And once, again, remember, if you don't want to do this, know who in the community does do it so you can refer them for their exercise program. An activity index-- are they low risk, moderate risk, high risk? OK, we went over that in the notes.

Once again, if you want further details, the American College of Sports Medicine is a terrific resource, acsm.org. Body composition-- you can do a body composition. And with body composition, what you can look at is you can use skin folds if you want. Right, if you want to do basic body composition in your office-- weight loss goals. Now, weight loss goals goes hand-in-hand with body composition. If you have more of a holistic practice, and you're trying to get patients to take care of themselves, maybe lose a little weight, you figure out what their percent body fat is.

And then using those same tables, you figure out, well, if we want you to have this percent body fat, how many pounds of fat would you have to lose? So then you can give them a weight loss program that says, OK, for your specific situation, we want you to lose 10 pounds.

So let's do this over a three-month period. So we're going to have you lose a pound every two to three weeks. And here's how we'll do it and basically work up the exercise program and also, developing a training-sensitive zone. This is where we work from 70 to 85% of our maximum heart rate. This is that scale I gave you.

Once again, if you don't want to go through something like that, you talk about conversational exercise. Optional tests-- and now we're talking about more if you have a facility-- a wellness facility where you might be working with that personal trainers or athletic trainers.

Cardiovascular endurance-- you can have them do Cooper's 1 and 1/2 mile test. You can get that off the Cooper Institute website if you want to look specifically at that. Once again, Human Kinetics-- you can get one book that incorporates all these different tests. You can use a step test if you want to-- just make sure you get the right age group.

Muscular strength-- you can use tensiometry, have a cable in your office. You can use an ergometer if you want to get strength that way. Or you can just have them go to a gym and do some repetitions. I wouldn't necessarily recommend one rep max. And finally, muscular endurance-- once again, these same tables-- sit ups in 60 seconds or pushups in 60 seconds.