Body Type Training and Nutrition

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UNIT ONE

Personalized Training for Your Body Type

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As personal trainers, it's our job to give our clients our absolute best in terms of advice and training. They place their trust in us, and it's up to us to show them the path to get the results they seek in achieving their fitness goals.

One of the most common reasons a person comes to a personal trainer is to change their body in some way—often to lose weight, or gain lean muscle mass and bulk up. Whereas there's nothing wrong with this, often someone is looking at media portrayals of various body types and hoping they can change themselves fundamentally to be like those others, as opposed to following a training program tailored to their body type.

A person likely cannot change their body type purely from something like being an ectomorph to a pure mesomorph, but an ectomorph can absolutely gain more muscle and bulk up with the right diet and exercise routine. This often will result in the client straddling the middle ground between two body types. However, this can take a large degree of dedication and training, and the results desired aren't always attainable.

One of the better goals to try and redirect your clients towards is training the optimal system for their own existing body type. As their personal trainer, you are well suited to evaluate where they're at and to recommend how they can make their existing body type really shine through for them. We'll dig into that, but first, let's talk about the variations in body types.

HOW WE'RE MADE

When putting together the right workout plan for a client's body type, there are several things to consider—most importantly being what body type they have naturally. Bone structure has a little to do with this in terms of what your body can support, and this is determined by genetics. There are three principal categories that most people fall into:

- **Endomorph Body Type** - This body type consists of higher body fat percentages, a body shaped like a pear, and is much more likely to store fat.
- **Ectomorph Body Type** - This is the tall, lanky individual who has difficulty putting on weight of any kind—muscle or fat. High metabolisms are common in these individuals.
- **Mesomorph Body Type** - This is commonly thought of as the "V" shape frame in the torso. Mesomorphs bulk muscle more easily, and have a fast metabolism.

A person can also have a combination of these types. For instance, as someone loses weight, they can often shift from being purely an endomorph to more of a mesomorph. By losing fat and gaining muscle, their body starts to show a more muscular frame. Depending on many factors like habits and genetics, this could be the best they could hope to achieve, so it's important to help mesomorph clients manage their expectations.

The workout plan is only part of the equation. Diet also has a lot to do with it. So, let's go over the basics there.

YOU CAN'T OUT-TRAIN YOUR DIET

First of all, remember that your specialty as a fitness professional is not diet. Only a registered dietician or similarly credentialed professional is qualified for that. However, there are some guidelines that can really make a difference. Here is a great article about how tracking your macronutrients, like healthy fats, protein, and carbohydrates, is a very reliable plan for fat loss. In fact, tracking these is also recommended for those who are at higher risk for weight gain simply from having a lower basal metabolic rate.

On top of that, though, remember that most clients aren't going to ever be able to just eat whatever they want, so long as they're working out hard in the gym. Michael Phelps, the Olympic swimmer, was often discussed in the media for his insane diet of over 8,000 calories per day when training. Phelps is an example of an outlier—someone who is extremely different from everyone else. So, when discussing this issue with your clients, just remind them that they aren't going to be able to always exercise away the calories they consume, especially as they get older in life. It might be possible for some teenagers and clients in their early twenties, but no one should reasonably expect such a metabolism to last forever.

TRAINING FOR EACH BODY TYPE

Working with your body is easier than working against it. For this reason, in terms of maintaining your client's fitness level, tailoring your program to their body type can help them stick with it. Trying to train a mesomorph like a cross-country athlete will likely result in injury, or at the very least strong discomfort. This dramatically decreases the likelihood that they will stick with your program, which does them and you a great disservice. So, let's go through ideal programming for each type.

Endomorph Training

Many people will likely solicit your services because they're an endomorph. Typically obese people with these body types will often benefit from weight training. The more lean muscle mass they have, the higher their basal metabolic rate will be, and, thus, the more calories they will burn every day. It's also important for these types to engage in a good portion of low-intensity cardio training for about an hour per week on top of strength training, especially in the lower body.

Another benefit of strength training for this group is psychological. Being that they've carried extra weight, they will likely be more familiar with this exertion. When someone carries extra weight, even standing up is an exercise that requires strength. So, use this to their advantage. With women, make sure they know that strength training will not cause them to bulk up.

Also remember that for someone carrying a lot of extra weight, even walking long distances can cause a lot of repetitive stress injuries. Start off by giving them confidence with whatever they do well. As their metabolism improves as well as their diet, branching out to other things will be helpful.

The critical thing with this body type is avoiding injury. If they walk, keep it to 20 minutes at a time for the first six weeks or so. As the weight comes off, this can go longer. Or, just have them get cardio exercise in

the form of the elliptical, the rower, or other machines that are easy on the joints.

For lifting weights in this population, consider squats, lunges, and deadlifts as they lose their initial weight and develop the strength they need to support their frame for more sophisticated movements.

Ectomorph Training

For ectomorphs, heavy strength training is likely going to be problematic. They are lean with likely high metabolisms, and as such, they should train to this. Think circuit training that involves moderate resistance.

People with this body type can often go for longer durations as well, so keep that in mind. High-intensity interval training can do great things for developing a six pack or toning their arms and legs, as this will help burn through any extra fat stores they have.

Body weight exercises are generally a good idea with this population. This way, they don't overload themselves too much and they're still able to really thrive in their fitness goals. This isn't to say to avoid strength training at all, but only to say that it's likely best to not make heavy weight training the primary focus for this group like you would a mesomorph. Also, interval training, in general, can be a great way for ectomorphs to stay engaged in their workouts.

For this population, consider a lot of the regular dumbbell exercises, focus on isolating muscle groups like you do with bicep curls, and go strong with aerobic exercise.

Mesomorph Training

Mesomorphs bulk muscle easily. They will likely get a lot out of training with heavy weights—just be sure to focus on their form. With people of this type, their upper body likely has broad shoulders and a tight waist, allowing for most typical barbell exercises as well as high-intensity interval training. Also, for this group, powerlifting can be extremely useful.

GENERAL GUIDELINES, NOT RULES

Remember that body types are not a hard science—they are more generalities. This is because there are a host of factors involved, some that can be controlled, like diet and exercise, and others that can't be, like genetics.

One great means of comparison between mesomorphs and ectomorphs is thinking of the difference between a rugby player and a soccer player, respectively. Both can run long distances, but the soccer player will likely run faster and the rugby player will likely have more power and brute strength. Whereas this is not always the case, it's a general concept that can serve you in determining the appropriate programming for these types of clients.

Overall, make sure that you are training your clients safely and in a way that keeps them engaged. Training them based on their body type is a great way to ensure you keep them around, safe, and happy.

Not yet a trainer but interested in the science behind health and fitness? Explore the ISSA's certified fitness trainer course to learn how to improve your training and boost your fitness. Then, take it to the next level and use that knowledge to help others as a certified personal trainer.

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UNIT TWO

The Link Between Genetics and Muscle Growth

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Science is opening new doors to understanding how our genes impact all areas of our lives. It has long been known that genetics impacts health, and it seemed safe to assume it also determines some of our fitness abilities. Not all of us are destined to be elite athletes, no matter how hard we train.

Now researchers know for sure certain genes impact how far we can go in fitness, endurance, athletics, and strength. Genetics impacts all areas of fitness and performance, including muscles and strength.

From sprinters who have genes allowing them to develop more fast-twitch muscle fiber to endurance runners with genetics dictating muscle contraction speeds, genes determine our abilities to some degree.

As a personal trainer, you will encounter clients who struggle to develop muscle strength and size and those who excel at it. You may also be increasingly expected to turn to genetic test results to help clients maximize their potential. With a better understanding of how genes impact muscle growth and development, you can improve client workouts and results.

YES, THERE ARE GENES THAT IMPACT MUSCLE GROWTH

In fact, there are several genes that affect muscle development and growth. Scientists have discovered many genes involved in muscle growth. How they are involved is complicated and not yet fully understood. And more genes that affect muscle growth are likely to be discovered in the future.

A big list of genes is known now to trigger muscle growth. For instance, in one study researchers looked at, the manipulation of over 40 genes in laboratory mice and found that they all increased hypertrophy in skeletal muscle. They found that three genes in particular—Asb15, Klf10, and Tpt1—were most highly expressed in muscle tissue[1].

CAN GENETICS AFFECT MUSCLE GROWTH AND DECLINE AS WELL?

Genes can also be involved in the decline of muscle tissue and strength. For example, the gene MSTN codes for a protein known as myostatin. Found mostly in muscle tissue, this protein is responsible for restraining muscle growth. A rare condition caused by a mutation in MSTN causes an overgrowth of muscle and abnormal hypertrophy[2].

Testosterone and Muscle Decline

One of the most important genetic factors that trigger declines in muscle tissue is the one regulating testosterone. When this hormone decreases, muscle mass becomes more difficult to develop and loss of tissue and strength can result. Low testosterone can be caused by medical conditions but is also a natural part of aging. Genes that regulate testosterone indirectly impact muscle tissue.

Can Genetics Affect Muscle Growth to the Extent that It is Impossible to Make Gains?

Unless you have a client with a rare and serious genetic disorder, it will always be possible to help them make muscle gains. The differences between most individuals in good health are not that great. Some of your clients will gain strength easily with a couple of sessions per week, while others will need to train harder and watch their diets more to see the same results.

GENETIC MEASURES THAT INFORM STRENGTH TRAINING

For clients who have undergone genetic testing, you can use the results to design better workouts, to set more appropriate fitness goals, and to motivate your clients to work toward them. For health and fitness, genetic tests provide a few pieces of information that are important for muscle growth and strength training:

Enhanced Weight Loss Genotype

For weight loss, fitness and health DNA tests give results ranging from low to enhanced. This rating gives you a lot of information about how a client gains or loses weight, responds to macronutrients, and changes body composition.

With respect to muscle mass, an enhanced genotype means strength training is essential. A client with this genotype and weight loss goals runs the risk of losing muscle mass without weightlifting or other strength exercises.

These clients also need to watch protein in the diet and eat enough to minimize muscle loss. For anyone doing strength training, it is important to plan diet and exercise to maximize fat loss and reduce the risk of losing muscle tissue. For clients with an enhanced genotype, adding protein to the diet in the right amounts is especially important.

Body Composition Genes

For these genes, your client will get a rating of below average, normal, or enhanced. The body composition test looks at a long list of genes related to how the ratio of fat to muscle tissue responds to strength training. Your enhanced clients will have the greatest response and find it easier to build muscle mass with proper training. Most people fall into the normal category.

Testosterone Levels

Testosterone is a hormone that plays a role in muscle growth. Men have much more of this hormone than women, which is why they develop strength and build muscle mass more easily. A genetic test of fitness and health will rate an individual as more likely, normal, or less likely.

The clients you should be concerned about are those rated as more likely. This means they are more likely to experience low testosterone levels.

DEVELOPING STRENGTH GOALS BASED ON GENETICS

Whether or not your client undergoes a DNA test, you may be able to determine some of their genetic tendencies relative to strength training, and that can help you set better goals together. If they have gotten a test and you have some of the results, this will make goal setting a little easier.

Discuss genetic results with your client and what their specific measures mean for strength training. This helps set realistic expectations and informs the goals they can reasonably achieve.

For example, if you have a client with a below average rating for body composition, they will struggle with building muscle and losing fat. With this information, you can set a body composition goal that makes sense for them and that may be less ambitious than what you would set for another client.

DESIGNING TRAINING SESSIONS AND MOTIVATING CLIENTS

Once you have goals in place, use the genetic information to design more effective, appropriate workouts for your client. Understanding a client's genetic factors and predispositions can also help with motivation. Expectations are important. If a client wants to look like a bodybuilder but has genes that make muscle building difficult, you need to help them adjust their expectations. Focus on health and making progress for motivation rather than an impossible goal.

Training Based on Weight Loss Genotypes

Whether your clients are interested in weight loss or not, their genotype can help you plan more successful training sessions. For instance, people with a low or below average genotype may not respond well to intense exercise. Using resistance training for both strength and cardio is a good strategy for these individuals.

Clients in the normal or enhanced range will see more results from higher-intensity workouts, both cardio and strength training. With these clients, you can really focus on strength development and hypertrophy.

Training by Body Composition Type

In considering clients with varying abilities to achieve and maintain a healthy body composition, you'll see results ranging from enhanced to below average, but most will be normal. Enhanced clients benefit from a focus on strength training. Two to three days per week is recommended. You will need to mix up exercises and challenge these clients in new ways.

For clients with a normal body composition type, two days per week of strength training is usually adequate. They will need more cardio than the enhanced group to lose fat. For below average clients, do strength training two to three times per week. Focus on heavier weights to help boost metabolism and burn fat. Both normal and below average clients benefit from one powerlifting session per week.

Regardless of the genotype of your client, everyone should be doing strength training at least twice per week. Once a week is not enough to get the benefits.

Working with Clients with Lower Testosterone

Clients with results that indicate they are more likely to have low testosterone levels are going to struggle more with muscle building. Testosterone also declines with age, so your male clients over 45 will naturally have this limitation as well.

If you have a client with low testosterone on a genetic test, consider recommending they see their doctor for further testing. Some underlying health conditions can cause low testosterone, and they should be addressed and managed.

Whether your client has a condition or just tends to have lower testosterone, you can include certain types of training and make lifestyle recommendations that support healthy levels. For instance, doing total body strength training is the best type of strength work for improving testosterone production. For cardio, high-intensity interval workouts are best.

Lifestyle habits especially important for these clients include getting adequate sleep. The body produces many of its hormones during sleep. Furthermore, lack of sleep can deplete testosterone levels. Excessive alcohol consumption also interferes with testosterone production, so encourage these clients to cut back on drinking.

Genetic-based training will become more common as research continues to unlock the secrets of our DNA. With testing more accessible than ever before, individuals have a greater opportunity to learn about their own strengths and weaknesses. As a trainer, you can use this information to make goals, training, and motivation more personalized and more effective for your clients.

Interested in learning more about training based on genetics? Become a DNA-Based Fitness Coach with the ISSA!

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UNIT THREE

How to Develop a Workout Plan Based on Genetics

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You know each client needs a personalized program to achieve results. You also know a client's unique genetic makeup plays a pivotal role in program design. So, it's important to apply the necessary techniques to complement each client's distinct DNA sequence. In doing so, you will find that clients exercise more efficiently and achieve superior results. Let's dive deeper into programming considerations and learn why they go beyond a client's goals.

THE DETAILS OF DNA FITNESS TESTING

Genetic testing varies based on the purpose of the test. Results obtained from a DNA test provide insight on a client's health risk for illness or disease, weight-loss potential, lifestyle inhibitors, prenatal or newborn issues, and anything else a client wishes to test for.

DNA fitness testing helps you know more about your client's fitness traits:

- Weight loss potential
- Training responses
- Energy utilization
- Recovery needs
- Injury risks

Determining the genetic makeup of a client is important for designing the right program to help them achieve their fitness goals. You can help teach your clients how to make personalized plans based on their DNA tests specific to nutrition and weight. DNA tests can serve as a starting point for not just your client, but also for families to pursue a healthy lifestyle together.

WHAT DO GENETIC TESTING RESULTS PROVIDE?

Genetic testing allows you to design the most accurate programs. These programs are a reliable predictor of clients' future success. Genetic testing improves our programming abilities and helps avoid the trial and error process associated with training new clients.

Exercise alone has a great impact on a client's lifestyle. The impact amplifies through weight loss, an improved diet, increased muscle mass, and overall better health. This promotes optimal health and well-being. Your clients' test results apply to lifestyle habits and workout plans in a way that can improve their health, diet, and quality of life.

Fat Burning Capabilities

Genetic testing provides results regarding different genotypes and how certain genes influence a client's fat burning capability. The scoring spectrum for fat loss response to cardio demonstrates this.

Every client can lose weight—it is more about how quickly a client can access fat fuel sources during cardio exercise. The genes scored in this report tell a lot about a client's ability to lose fat from a three-day-per-week

cardio program. The results give an "enhanced" or "normal" score to help trainers determine the action required for results.

The "normal" reading is the one you will see the most of. Even though all changes in mitochondrial adaptations from aerobic exercise are similar, clients still might improve fitness at a different rate depending on their unique results.

If your client's report shows an "enhanced" reading, they will experience more fat loss compared to other genotypes. The "enhanced" reading means that client will use stored fat for energy much quicker than a client whose reading is normal.

If a client receives "enhanced" scores, encourage them to take advantage of their genetic capability. When developing a workout plan, you now know to prescribe at least the minimum amount of cardio needed to get them to their health and fitness goals. This will help them burn even more fat than the average person.

Performance and Strength

Genetics impact a variety of performance-related traits:

- Muscular strength
- Primary muscle fiber types
- VO2 max
- Muscle mass
- Height
- Flexibility
- Coordination
- Intellectual ability

The body composition response to strength training is another scoring that can help determine what program to design for your client. For this scoring report, the "enhanced" genotype means a client will lose weight, decrease their body fat, and build muscle through strength training.

Most bodybuilders and power athletes have an "enhanced" genotype. Whereas the "normal" genotype client will need to train more often to get results. Emphasize the importance of nutrition and cardio for this client. Ensure they remain strict with their diet plan and cardio regimen.

The "below average" genotype for this scoring needs to consider more time in the gym with a lot of exercise variety. The client should include heavy weight lifting and high intensities to build muscle, increase strength, and achieve results that an enhanced genotype can with much less effort.

DNA results and the applied programs are still being affirmed through long-term studies. However, you should still help clients with the knowledge you do have by considering these items when developing a workout plan.

Body Response and Recovery

Systemic inflammation is another important score component that can help in prescribing recovery schedules. Each client has a unique training limit or capacity. The amount of inflammation response they have helps you confirm the amount of rest and recovery they need throughout the program.

A "well above average" score tells us the client's body can take longer to heal and recover. These clients need to put a strict emphasis on warm-ups, cool downs, and recovery techniques. Having days in the program where your client performs light cardio, yoga, stretching, or foam rolling is very beneficial for lowering inflammation.

Injury risk is important to note in this section especially with another "above average" result. Pairing this with sleep duration can make for the best recovery aid routine.

Some testing will encompass VO2 max and stroke volume factors. VO2 max is important to understand when working with athletes or clients who have performance goals. Stroke volume is the amount of blood the heart pumps out every beat. The more intense the exercise the higher the stroke volume.

A "normal" genotype will experience good improvements in stroke volume. An "above average" genotype will notice greater improvements. The more blood a client can move throughout the body the more efficient they will be.

Learn more about why you should encourage your clients to perform a home genetic test.

WORKOUT PLANS BASED ON DNA FITNESS TESTING

Fitness and nutrition professionals with expanded knowledge and qualifications in genetic testing can work with clients based on their unique DNA report results.

Results include weight loss tendency, exercise response, mental and physical potential, recovery, injury risks, and more. Scoring these key trait categories can tell a trainer a lot about the effect the exercise mode, duration, and intensity will have on a client's results. Scoring can range from "below average" to "normal" to "enhanced."

The scores inform trainers on what a client's fitness plan should look like. Suppose a client's results come back with a weight loss tendency score of "below average." This client will lose weight but must focus more on proper nutrition and exercise behavior that the average person. This tells us they are at a higher risk to gain the weight back if they deter too much from their regimen.

DNA testing companies provide scoring for fat loss response to cardio as well. With a "normal" score here you can expect to prescribe your client cardio 4-6 days per week for 45-60 minutes each day. The main difference between a "normal" and "enhanced" reading is that the "normal" score tells us that it takes longer for the client to utilize fat as fuel. Therefore, having them do more cardio for a longer duration is necessary to attain results.

Body composition response to strength training is another key factor where an "enhanced" reading is optimal and these individuals will require significantly less time on strength training to notice results.

Clients who score "enhanced" only need 1-2 days per week strength training to notice steady improvements. Although the enhanced reading should always take advantage of their genetic potential and do 3-4 days of strength training to get optimal results. These scores are similar to the principle of training based on specific body types.

WHAT YOU GET WITH A DNA TEST FOR FITNESS

At-home DNA testing kits provide reports on exercise response, diet markers, diet type recommendations, food sensitivities, alcohol responses, and predispositions that clients may have. These are essential components in designing a customized workout plan.

Vitamins, minerals, and all nutrient deficiencies or requirements paired with optimal training types—power, endurance, and strength responses—can determine the extent of client results.

Other important aspects that support a well-developed workout plan are sleep quality, stress markers, and the effect of caffeine on the body. Not knowing these traits makes it difficult to tailor programs to each client.

When choosing which DNA fitness company to use, it is important to note the information you will receive. The report and all its details are crucial because you want to ensure you receive plenty of information regarding each specific client. Companies will often provide you with the tools and resources to interpret the reports; include these for clients to review.

Always look at company reviews, compare costs, and test conclusiveness. Gathering such details will help you discover the best one for your clients.

INCREASING MOTIVATION AND POTENTIAL

As you can see, fitness professionals must gain a better understanding of genetic testing. Knowing how the results of these tests can impact a client's results will help you, the trainer, develop better workout plans. The information provided assists in prescribing the right amount of volume, intensity, and rest periods. The challenge becomes just right for each client.

DNA fitness tests lead to increased motivation and potential for each client. If they understand why they are doing the workouts you prescribe and that it is specifically for them they feel more confident.

You are not just telling them what to do, you are showing them why they are doing it where they can see it for themselves. Genetic testing reports show each person how much control they have on their results if they commit to the right workout plan. Client autonomy becomes the biggest component in producing long-lasting results.

If you want your clients' training to be based on DNA fitness testing, be sure to explore ISSA's DNA-Based Fitness Coach course. This course covers powerful tools and inside knowledge to be able to prescribe programs based on your client's DNA. These tools will set you apart from the rest.

UNIT FOUR

Eating for Your Body Type

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When it comes to nutrition and training, there is no one-size-fits-all approach. This makes it challenging to apply generalized plans to multiple individuals. It's important to take a step back and realize this simple truth: we are all individuals. Each body is unique. Every person carries a genetic makeup unique to them and them alone. However, there are some similarities between body types.

The idea in understanding each of the body types is that you are better able to tailor individualized plans to achieve goals and reach full-body potential. Understanding your body type can help you know how to train for your specific body type and it can aid in developing a nutritional plan to support your body composition goals. Body type can give clues about your metabolism and hormones. How your body processes the nutrients you consume. Let's dig into the characteristics of each body type and their specific nutritional needs.

ENDOMORPH BODY TYPE

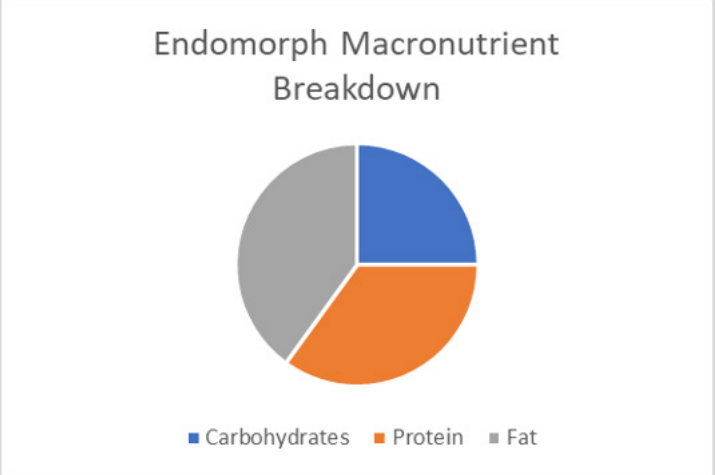
Endomorphs typically have a predominance of carrying more body fat through various regions of the body. They are typically thought of as curvaceous women or stocky men. The endomorphic body tends to carry weight around the belly and the lower body. Most predominantly in the hips and thighs.

Endomorph Macronutrient Profile

Those with an endomorph body type have a lower tolerance to carbs compared to both mesomorphs and ectomorphs. Endomorphs are good at converting carbohydrates into sugar and storing them as fat. Because of this, they may be more prone to insulin resistance than the other body types. Increased carbohydrate sensitivity puts endomorphs are at highest risk for developing diabetes. Endomorphs should eat an even distribution of protein, healthy fats, and carbohydrates.

Carbohydrates for endomorphs should come mostly from vegetables and whole grains. All foods rich in carbohydrates are best consumed during or after a workout for endomorphs. This will help to maximize muscle-building potential without increasing fat gain.

Endomorphs should prioritize fats and protein, keeping carbohydrates on the lower end of the equation. Those with this body type should forgo the old advice that eating fat will make you fat. On the contrary. Ketogenic or low-carb diets are a great option for endomorphs. Monounsaturated and omega-3 fats can help endomorphs feel fuller longer. This can lead to eating less, thereby helping them trim unwanted body fat. In addition, fat has minimal effect on insulin levels and therefore results in less blood sugar spikes. This can help to reduce the overall risk of diabetes.



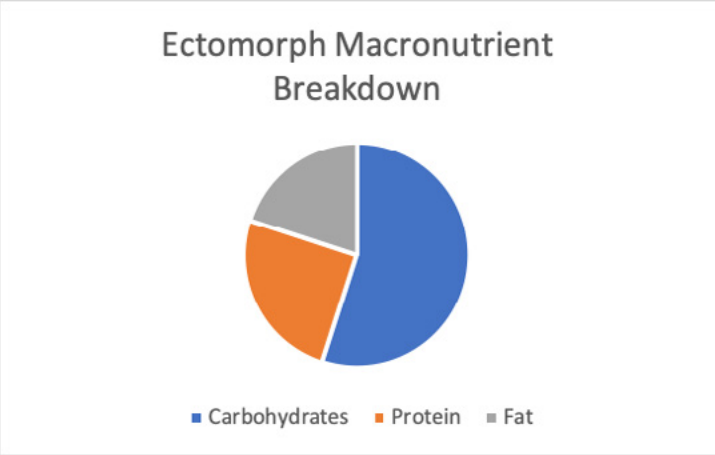
Endomorphs should cut back on their carb intake and focus more on healthy proteins and fats. However, this does not mean they must nix all carbohydrates. Endomorph's carbs should come from mostly vegetables and whole-grain foods. Limit breads, beverages, pastas, junk food, and high-sugar fruits. These foods will be digested very quickly and lead to blood sugar spikes.

ECTOMORPH BODY TYPE

Ectomorphs tend to be thin, long, and lanky with relatively low body fat and low body weight. They typically have a smaller bone structure. Their shoulders are usually narrower than their hips. Ectomorphs typically do not put on muscle or body weight easily. It usually takes a lot for the number on the scale to move.

Ectomorphs are generally thyroid dominant. This means they have a higher basal metabolic rate (BMR). An individual's BMR is indicative of how much energy they burn at rest. A high BMR is indicative of a fast metabolism. This means ectomorphs burn calories very quickly. This can lead to them finding themselves frequently hungry throughout the day.

Ectomorph Macronutrient Profile



Due to their higher BMR and overall capacity to burn calories quickly and efficiently, ectomorphs typically have a higher carb tolerance. When nutrition planning for ectomorphs, one should think higher carbohydrate intake, fewer fats. Macronutrient breakdown for ectomorphs should be predominantly carbohydrates. Lean protein and fat should be split almost evenly for the remaining calories. The number of calories will differ from person to person and is dependent on many factors. There are many calculators out there that can help calculate daily caloric requirements. If your ectomorph clients are training for endurance or muscle gains, they should consider consuming most of their carbohydrates following their workout.

Ectomorphs typically do not fare well on high-fat diets. This is because their fast metabolisms crave carbohydrates. However, the type of carbohydrates consumed is of importance. Ectomorphs should stick to complex carbohydrates. This will leave them feeling fuller longer.

They should also avoid highly processed carbohydrate foods like chips and candy. Such foods will break down very quickly. This leads to hunger pains shortly after consumption and then overconsumption of excess calories. For ectomorphs, this can result in a "skinny fat" physique. This term describes individuals that look relatively thin from the outside but carry a lot of visceral fat internally. Visceral fat consists of fat cells that pack around the organs of the body. Increased visceral fat leads to increased risk of

cardiovascular issues as well as other metabolic conditions. Ectomorphs will fair best when sticking to whole, unrefined carbohydrates accompanied by moderate protein and healthy fats.

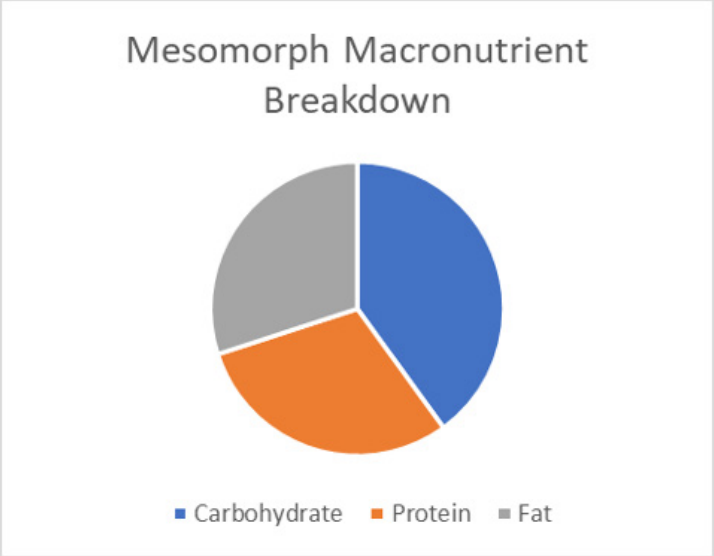
MESOMORPH BODY TYPE

Mesomorphs tend to be more muscle-dominant individuals. They usually display an hourglass figure with a medium build frame. These individuals are genetically predisposed to build muscle mass. Weight loss and weight gain typically occur quickly in response to dietary and workout modifications.

Mesomorph Macronutrient Profile

Because mesomorphs are predisposed to building muscle mass, they require a slightly higher calorie intake. The muscles they are building during a workout require more calories to sustain. Mesomorphs typically require the most protein intake of all three body types.

Mesomorph macronutrient profiles should include a variety of fats, complex carbs, and proteins. These individuals typically perform and feel their best with a balance between all macronutrients. Mesomorphs should consume fast-digesting carb-dense foods or drinks during weight training to support building lean muscle mass.



Mesomorphs should watch out for foods notorious for hidden sugars. Foods like yogurts, sauces, instant oatmeals, and non-natural peanut butters. Even peanut butters with “natural” on the label should be checked. Often, they sneak in added sugars but can still label it as “natural”. The best way to avoid added sugars is to read the nutrition facts label.

WHICH BODY TYPE IS BEST?

Each of the three body types has strengths and weaknesses. Not one of these body types is better than the other. It’s important to note that individuals rarely fall under the true definition of one of these body types. Typically, people are a hybrid between two types, and sometimes even three. Individuals can exhibit unique characteristics from each of the different body types. This is why there is no cut and dry program to getting results. It will take time and experimenting to find what works best for each body.

Body typing can help to tell us the metabolic differences between individuals. It can provide information about eating habits and how a body may respond to food intake. Both volume of food intake and food type. Once you have established body type, it’s important to adjust nutrient intake accordingly. This will ultimately help your clients eat the right amounts to help them reach their body composition and fitness goals.

It isn't always as simple as eating less and moving more. You can't just exercise away the calories you consume, especially as you get older. There is quite a bit more to it than that. However, there are tools to help determine calorie needs. But it's important to remember that these provide a baseline. Our bodies are not calculators. They are ever-changing. As the body changes, its' nutritional needs change right along with it.

Interested in taking your knowledge of nutrition to the next level? Check out the ISSA Sports Nutrition program to earn your nutrition certification from the comfort of your own home.

How Does DNA Affect Your Nutrition?

ISSA INTERNATIONAL SPORTS SCIENCES ASSOCIATION

Anyone who has ever struggled to lose weight, and the trainers working with them, knows that there is no single best diet or nutritional plan that works for everyone.

A big reason for that is our individual genetic makeup. With modern technology we can now take simple tests for specific genes. This information helps explain some of the struggles people experience regarding nutrition, health, and weight.

Everyone has a unique genome that impacts everything from how we utilize protein and fat to whether we absorb enough iron from the foods we eat. Knowledge of these individual differences is a powerful tool.

If you have clients interested in taking health or fitness DNA tests for personalized reports, it's important that you know what to do with the results. Find out what these reports tell you about a client's nutritional needs and limitations and how to use that information for their benefit.

DNA AND NUTRITION – WHAT IS NUTRIGENOMICS?

Being able to look at an individual's genetic makeup is now less expensive and more accessible than ever. Any one of your clients can get a test done that looks specifically at how their genes impact nutrition, health, fitness, body composition, and more.

Nutritional genomics, or nutrigenomics, is the study of the interactions between an individual's DNA, nutrition, and health. It can also be a more general study of the overall human genome and nutrition. Researchers in this field look at how foods and nutrients impact human genetics and how genes inform the body's response to nutrients.

HOW DOES GENETICS AFFECT NUTRITION? AND HOW CAN THAT HELP CLIENTS?

While researchers are working to uncover generalities about the human genome and nutrition, it is also possible to get individualized data. For trainers and clients, it is this personalized information—how one or more genes or mutations in genes impact how we absorb micronutrients, gain weight, or utilize macronutrients—that is important.

With a fitness and nutrition DNA report for a client, you can pick out the information that will help determine goals and strategies for meeting them. Personalized genetic information will help you:

- Set goals that are more reasonable for each client
- Recommend macronutrient ratios that make sense for a healthy weight and body composition
- Create nutritional plans that consider vitamin or mineral processing or uptake issues
- Create a workout and diet plan for more effective weight loss

DNA TESTS AND NUTRIENT UTILIZATION

A client's DNA-based nutrition report will include a lot of information about how they utilize nutrients, including macronutrients, vitamins, and minerals. Genetic differences can lead to variations in how these nutrients are absorbed, how they are used, and the proportions and amounts that maximize health and wellness.

Macronutrients

Weight loss and maintenance, energy utilization, athletic performance, and more depend on how we consume and utilize proteins, fats, and carbohydrates. Most recommendations for macronutrient proportions are generalized, but DNA tests inform more personalized macro ratios.

- **Protein.** Most people have a "normal" genotype for protein utilization. Those who do should consume about 15 to 30 percent of daily calories in the form of proteins. Their ability to lose weight will not depend on protein intake. The less common "enhanced" genotype means that an individual will be able to lose weight more effectively and efficiently with a higher proportion of protein in the diet, about 25 to 30 percent.
- **Fat.** As with protein, most people fall into the "normal" category for fat utilization. Their weight loss seems to be independent of the percentage of fat in the diet if calorie intake is reasonable. Those who test for the "low" genotype should consume a smaller proportion of fat, about 15 to 25 percent of daily calories. This will aid in weight loss and maintenance.
- **Carbohydrates.** For carbohydrate utilization, there are three genotypes: "normal," "enhanced," and "low." Those in the "normal" category will see no major differences in weight loss based on carb proportions. The "enhanced" genotype means that a person benefits from eating more carbs, up to 65 percent. But note that these should be complex carbs, like whole grains and beans. In the "low" category, people should eat fewer carbs and be especially careful to avoid starchy foods and processed grains, such as potatoes and white bread. The glycemic index is a good tool to help these clients choose better carb sources.

Micronutrients

Less important for weight loss, but still crucial for overall health, is information on micronutrient utilization. Most health and fitness DNA tests provide data on Vitamins A, B6, B9, B12, C, and D as well as calcium, iron, magnesium, and zinc.

Certain genotypes can tell you if a client is absorbing and utilizing these nutrients adequately. This is important to know for health but can also be useful for nutrition and weight goals. For instance, some people have a "low" genotype for B12, which means they tend to be deficient. Low levels of B12 cause a type of anemia, called pernicious anemia. This can lead to serious health risks and make working out more difficult due to fatigue.

A genotype that makes it more likely for an individual to have low levels of calcium means they are vulnerable to osteoporosis. Again, this can lead to serious health problems but also interferes with fitness. Weak bones can be broken more easily during training activities.

One of the best ways to ensure an adequate intake of micronutrients, both vitamins and minerals, is to eat a diet rich in a variety of vegetables. Talk to your veggie-resistant clients about how important this is for health and weight maintenance.

NUTRITION AND GENETICS AND THE IMPACT ON DISEASE RISK AND HEALTH

Of course, DNA reports for nutrition are important for more than simply meeting weight loss goals. Your clients also come to you for advice on a healthy diet to avoid disease and to live well. These reports are packed with different types of information to help you advise them more effectively.

How Does Genetics Affect Nutrition and Health Measures?

Certain health measures, like cholesterol, are impacted by genetics as well as diet. For instance, you may have a client with a "sensitive" or "highly sensitive" genotype for cholesterol response to dietary fat. This means their cholesterol levels tend to increase more rapidly with fat intake as compared to someone with the "normal" genotype. They need to be more careful about the fat content in their diets.

You can also learn about an individual's insulin response to dietary fat. Certain genes and mutations lead to greater insulin sensitivity with fat in the diet. Most people have better sensitivity with a lower-fat diet, but there are exceptions. Those with the "highly sensitive" genotype, for example, benefit from eating up to 40 percent of their calories from healthy fats.

Diabetes is a major public and individual health problem in the U.S. You may have clients come to you with this disease or at risk for it. Understanding insulin sensitivity and response can help you help them make better food choices to control blood glucose levels.

Polyunsaturated fats, like omega-3 fatty acids and alpha-linolenic acids, are the so-called healthy fats. The body does not make these fats, so how much a person has in their bloodstream largely depends on diet. Some genes, however, also make an impact. Although common, the "normal" genotype for this is not ideal. Clients with this result really need to focus on adding healthy fats to their daily meals.

Avoid Giving Medical Advice

When you use DNA reports to help guide nutrition choices for clients, you run the risk of providing medical advice without being qualified. This is especially true for advice related to health risks and chronic disease.

You can absolutely provide guidance on how to plan and eat a healthy diet for both weight goals and overall health and wellness. You cannot advise clients to use their diet to treat or manage any kind of chronic illness, though. If you are at all unsure about where to draw the line, err on the side of caution. Recommend they see a doctor for specific medical advice.

The use of individualized DNA reports is poised to revolutionize health, wellness, and fitness. Personal trainers need to be a part of this big change. You can take more personalized, molecular, and genetic

information for each client and help them adapt their lifestyles, diets, and fitness routines for better results. Make sure you understand these reports, how to use them, and how to communicate the results with clients.

Clients today expect their trainers and nutrition coaches to be up to date on all the related science, including genomics. To be able to better help clients and to add a new certification to your credentials, check out the ISSA's online DNA-Based Fitness Coach course.

UNIT SIX

Protein, Carbs, and Fat: How DNA Affects Macros in Your Diet

ISSA INTERNATIONAL SPORTS SCIENCES ASSOCIATION

Nutrition coaches and personal trainers are equipped with more information to help their clients than ever before. In addition to all the research into weight loss and health, you can now get personalized information about each client you work with.

Genetic testing is increasingly popular, and if you work with clients in health and fitness, you must stay up to date. If they haven't yet, clients will begin asking you about genetic tests and how they can use them for weight loss and other fitness goals.

One area of nutrition with a lot of individual variation involves choosing macronutrient ratios. Certain ratios of protein, fat, and carbs work well for most people in a particular situation, like those trying to lose weight, improve insulin resistance, or put on muscle mass. However, you can't reach everyone with the same strategy. A genetic test can tell you more about an individual, how they process macros, and their ideal intake ratios.

WHY ARE GENETIC FACTORS AFFECTING MACROS IN YOUR DIET IMPORTANT?

Macronutrients—protein, fat, and carbohydrates—make up the bulk of our diet. In addition to many other functions in the body, they provide us with the energy needed just to live and function. Normal growth and development, as well as other health factors, depend on getting adequate amounts and the proper balance of these nutrients. But what is the right amount of each? Turns out, it depends on genetics.

Science Proves We're All Different

Everyone responds uniquely to the same foods and diet. Nutritionists and coaches have long known this, but recently a big study proved it. Called the PREDICT study[1], it included over 1,000 participants. More than half of these were identical twins with the same genetics.

The researchers followed the participants' diets and measured several health and wellness factors throughout the study. The responses to the same foods varied widely by individual. While the study did not consider all the potential environmental factors that could account for differences, it did conclude through the study of twins that about one-third of the variations could be attributed to individual genetics.

Macro Ratios Vary for Both Populations and Individuals

For most people, general recommended amounts and ratios of macros in the diet can be followed for good health and to maintain weight. But, not everyone responds the same way to the same diet. Special groups may need different ratios, like people looking to lose weight or build muscle.

Special situations, such as weight loss, may call for shifting ratios of macros in the diet, but individual genetic differences may also be important in making tweaks. Genetic information can tell you how a client utilizes each macronutrient, how their weight responds to various ratios of macronutrients, how body composition changes in response to macro amounts, and more.

What makes a diet successful for weight loss? It can be confusing when there are so many diets advertised, especially for your clients. Read up on the three basic elements that lead to weight loss.

PROTEIN UTILIZATION

A standard health and fitness, sometimes known as lifestyle, genetic test can provide you with information about how your client uses protein. With this information, you can better determine an appropriate daily percentage for protein intake with their specific goals in mind.

High-protein diets, like a paleo or ketogenic diet, are popular now. Many people use them to lose weight, to build muscle, or both. The gene known as FTO can provide information on how well these diets will work for an individual client. The test can also help you determine an appropriate amount of daily protein intake for them.

Amino acid supplements are increasingly popular for weight loss. But do they work? We'll give you the rundown here on using branched-chain amino acids to lose weight.

The "Normal" Genotype

If you work regularly with clients and genetic tests, you'll realize that most fall into the normal category. This means that they don't have the variation in FTO that causes body mass and composition to change relative to protein intake.

In other words, these clients may not see much difference in weight loss or fat loss by upping protein. The recommended daily protein intake for these clients is 15 to 30 percent of total calories. Those who are more active should be on the higher end.

The "Enhanced" Genotype

These are your clients who will benefit from eating a greater percentage of protein. They have genetic variants that trigger greater weight loss with more protein in the diet. These people should aim for getting 25 to 35 percent of the daily calories from protein.

This may seem like the lucky group, but there is a downside. They also tend to lose lean muscle when losing weight. For these clients, you need to be strict with strength training and make sure they do it regularly to avoid muscle loss and to enhance fat loss.

FAT UTILIZATION

Too often clients will assume that fat is bad, that they should avoid it at all costs, especially for weight loss. Fat, just like protein and carbs, is an essential nutrient. It is important for cell structure, hormonal signaling, vitamin utilization, and for making foods satisfying and helping you feel full.

The typical American diet is much too high in fat. While it is necessary in the diet, the foods readily available to us also make it far too easy to overindulge. Striking the right balance with the other macros and between types of fats maximizes health and weight loss goals. Several different genes are tested to determine the fat genotype.

The "Normal" Genotype

Again, most people have the so-called normal genotype for fat utilization. This means that as long as they stick with a dietary plan with a sensible number of calories, the amount of fat consumed will not impact weight loss or maintenance. These clients can consume between 20 and 35 percent of their calories as fat, including no more than ten percent saturated fats.

The "Low" Genotype

With this genotype, a client has some unfavorable variations in the fat-related genes. They are more sensitive than others to types and amounts of fat in the diet. Eating too much fat triggers more stored body fat and weight gain in these people. On the other hand, reducing fat in the diet can promote weight loss. They may benefit from a low-fat diet, defined as 15 to 25 percent of daily calories.

CARBOHYDRATE UTILIZATION

While fats have long been the bad guys of weight loss, dieters in recent years have found a new villain in carbs. Low-carb diets are popular for losing weight, but it's important to remember that carbohydrates are essential for energy and other aspects of health.

Some people also avoid carbs in the hopes of preventing insulin resistance and diabetes. It's true that higher amounts of simple carbs, like sugar and refined grains, can cause spikes in blood sugar and eventually insulin resistance. But research indicates that the quality of carbohydrates consumed is more important than quantity[2]. Tests of the IRS1 gene can clue you in to how your clients respond to carb intake for health and weight.

The "Normal" Genotype

For most people who have a normal genotype, weight loss will not vary depending on the percentage of carbs in the diet. This may be disappointing for those clients who hoped to use high-protein, low-carb diets to lose weight. As a coach, it's your job to explain that counting overall calories and focusing on high-quality carbohydrates will benefit their weight and health.

The "Enhanced" Genotype

The carb-lovers on your client list will be thrilled to get this result. The "enhanced" genotype indicates that a person will have better weight loss or maintenance results with a high-carb diet, about 65 percent. On this diet, clients should restrict fat to 20 percent and focus on high-quality carbs while avoiding refined grains and sugar.

The "Low" Genotype

Clients in this category really can benefit from a low-carb diet that is richer in protein, healthy fats, and vegetables. They will have more weight loss success with fewer carbs in total and by almost totally avoiding processed, refined carbs and sugar. A useful tool for these clients may be the glycemic index. Show them how to use it to choose better carb sources.

WHAT IS A COACH'S SCOPE OF PRACTICE WITH GENETIC TESTING?

As you work with a client's genetic results and try to optimize their nutrition, keep in mind your limitations as a coach. Your job is to listen to clients, determine their needs and goals, and work with them to make nutrition recommendations.

When you start getting into genetics, clients may want to talk about disease and health issues that are firmly outside your scope of practice. Any time a client's needs veer into the medical, take a step back and suggest they see their doctor. A nutrition coach is an educator and guide and plays an important role in helping people live healthy lives, but they are not medical professionals.

With that in mind, a good personal trainer or nutrition coach can take some of the risk and guesswork out of finding the right way to help a client. We already know that one diet or fitness plan cannot possibly be optimal for everyone. Each person is unique, and without genetic information, determining the best plan requires a lot of trial and error.

Are you a certified DNA-based Fitness Coach yet? What are you waiting for? It's easy to get certified when you study online: check out the ISSA's course for becoming a DNA-Based Fitness Coach.