

Weight Management Through Nutrition & Exercise

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As a member of today's society, you are likely familiar with the term "yo-yo dieting," which many people fall prey to. Individuals feel the pressure to commit to extreme restrictions, supplement regimens, and exercise programs as the only way to reach their goals. The problem with this type of diet and exercise approach is that it is simply not scientific. People ultimately lose quality of life and cannot sustain the extreme demands on their body. They then end up back where they started. In this article I will discuss what happens when we yo-yo diet, and why it backfires, as well as how to approach nutrition and weight loss scientifically.



Why Extreme Dieting and Exercise Don't Work

All bodies have a certain number of calories needed to survive at total rest. This is called the "resting metabolic rate" or RMR. When someone limits their calories to an extreme degree, below the RMR, something happens. The body begins to change its chemistry to reduce how many calories are burned each day to survive. The RMR decreases over time. How does it do this? By changing its chemistry and hormones, and using muscle as a form of fuel. Muscle is what burns calories, so the body will shift to storing fat and burning muscle to reduce calorie burn each day. This reduces metabolism over time leading to "adaptive thermogenesis", aka "starvation mode". It is therefore possible to not lose weight and even to gain weight, simply by undereating. Those who eat too little and space meals out too far send danger signals to their body. This makes the body slow down how many calories it burns to adapt to the threat of malnutrition. Remember, we need to eat to live!

Human beings have thousands of years of programming built into us that allows us to survive through feast and famine. Studies show that once a metabolism has "adapted", it can stay

“stuck” at a low level for years unless something is done. Studies also show that each time a dieter tries an over-restriction, the body adapts more efficiently. The RMR would get lower each time. The RMR can drop hundreds of calories below normal, meaning you burn that much less per day. This makes it very easy to regain any lost weight after extreme dieting.

This cycle can be reversed by adding in exercise with a gradual calorie increase towards a “safe” calorie restriction. Malnutrition that could affect the endocrine system should also be addressed. Common diet-induced nutrition deficiencies/insufficiencies are:

- ✔ B vitamins
- ✔ Vitamin D
- ✔ Calcium
- ✔ Iron
- ✔ Zinc
- ✔ Magnesium
- ✔ Potassium.

In fact, the 2020 nutrition label updates now include several of these nutrients to help people better monitor their intakes to avoid deficiency.



Now, take the element of exercise. Some people might eat enough calories, but their exercise is so extreme that they burn too many calories. They will end up with the same situation, leading to a lower metabolism. Active people and athletes need muscle to be stronger, faster, more powerful... and to avoid injury! If a person is

not eating enough fuel for their exercise, they run the risk of not only retaining fat and not reaching their athletic potential, but also increasing their risk of injury. Injuries take time to heal and are harmful to individuals mentally and physically. Many use exercise as a means to manage stress, in addition to a healthy weight. Let's face it – no one wants to be laid up on the couch recovering from an avoidable injury! It's even worse in the competitive athlete, whose scholarship or career depends on it.

Bottom line: extreme dieting and extreme exercise do not make for a healthy body.

Healthy Weight Loss

How do we approach weight loss and exercise nutrition from a scientific perspective? Always support your body's energy burn with adequate calorie intake. Calories can be limited in moderation. Weight loss should happen gradually. This way, the body will not recognize a threat and will burn fat at a reasonable rate of 1-2 pounds per week, depending on the restriction. Culture today has created an expectation for it to be "normal" to lose 10 pounds in a week. This is not scientific or healthy. Gradual loss is more likely to be from fat, whereas rapid loss is mostly water and muscle as the body tries to adapt to the extreme, later leading to weight rebound.

Remember that it is best to find a Registered Dietitian Nutritionist (RDN) to create a custom nutrition plan for you. RDNs are licensed health care providers bound legally to a code of ethics. In many states, it is still legal for anyone to advertise as being a "nutritionist" without formal education or professional qualifications. Similarly, the same considerations should be taken into account when choosing an athletic trainer. In fact, the more out of shape you are, the more important this is. Physical therapists, exercise physiologists, and strength and conditioning coaches with a bachelor's degree in the exercise science field are all examples of qualified professionals who can help you avoid injuries while improving your fitness level.



To start on your own, go to globalrph.com and calculate your RMR using the Harris-Benedict Equation if you are normal or overweight (BMI 18-29), or the Mifflin St Jeor (Basal Metabolic Rate) Equation if you are obese (BMI 30 or higher). Keep in mind that if your body fat percentage is relatively low and muscle is extremely high, BMI is not a good measure. BMI only accounts for weight to height ratio, not body fat percentage. In this case use the

Harris-Benedict Equation. From there, add your activity factor – sedentary, light, moderate, high, or very high. This will then tell you how many calories you need to eat to maintain your weight.

If your goal is weight loss, you should then deduct 500 calories per day from this calorie goal to lose 1 pound per week. Or you may want to deduct up to 1,000 calories to lose 2 pounds per week. As long you keep your calorie goal above your RMR, you will not go into starvation mode unless you are overtraining. Overtraining occurs when activity is increased too quickly for the

body to catch up, when not eating enough food, and when not resting or sleeping adequately. If you want to lose weight faster than your calorie goal will allow, then increase your exercise to the next activity factor. This will allow you to eat the same amount of food but burn the remaining number of calories needed to reach your weight loss goal per week. Be sure to take into consideration your current fitness level and consult with one of the athletic professionals mentioned above to reduce risk of doing too much too quickly.

When it comes to eating, calories are not the only thing that is important. Your macronutrients (carbohydrates, proteins, and fats) and micronutrients (vitamins and minerals) are all critical for health, weight loss, and athletic performance. If the types of foods you are choosing are imbalanced, your body will have to adapt. You want to give it what it needs up front so that it can use its resources to perform its very best, not work to make ends meet!

Pre-Exercise Eating & Hydration

Meal timing should be 3-4 hours before exercise. Snack timing should be 30-60 minutes before exercise. They should be high in carbohydrate (grains, starchy vegetables, fruits, etc.) and lean protein. Fiber and fat will slow stomach emptying and how quickly your body is fueled by the meal, so save those nutrients for after the work out or training.

Meal hydration should include 17-20oz water or sports drink (2-3mL/lb), and snack hydration should include 5-10oz water or sports drink. Sports drinks should contain 6% to 8% carbohydrate and can be purchased pre-packaged or mixed in a standard water bottle from powders.

During-Exercise Eating & Hydration

Carbohydrates should be eaten for exercise bouts of continuous activity lasting over an hour for strength training activities. For endurance activities such as running and team sports, they should be eaten shortly after starting to exercise.

Timing: Eat 30 g to 60 g carbohydrate/hour spaced every 15-20 minutes (after the 1st hour for strength training, or within the 1st hour for endurance)

Type of food: Moderate-glycemic carbohydrate with small amounts of protein, low in fat and fiber are best. Examples of this are:

- 🌿 granola bars
- 🌿 crackers
- 🌿 high-carbohydrate/moderate-protein energy bars
- 🌿 dry whole grain cereal
- 🌿 fruit
- 🌿 carbohydrate/protein shakes



Hydration is based on sweat rate (how much weight is lost during exercise from sweat and respirations). Sweat rate is determined by weighing before and after exercise. The weight lost from exercise should be replaced at 16-24oz per pound. On average, drinking 5 to 10 oz of water or sports drink every 15-20 minutes should satisfy this need.

Sports drinks not only replace fluids but electrolytes lost such as sodium and potassium. While not appropriate for inactive people, they are highly important for the physically active. Studies show that disaccharides (small, 2 molecule sugars) enhance athletic performance the most. While sugar consumption is generally discouraged, there is a place and time for every type of fuel. In this case the sugars are burned immediately during exercise and are needed to reduce injury risk and boost performance.

Post-Exercise Eating & Hydration

The body has a 6-hour anabolic (muscle building) period post-exercise. During this time fueling must take place in order to minimize post-exercise muscle loss and maximize fat burn. Muscle needs recovery fuel to heal and burn fat after exercise. Nutritional support during this time will support a high RMR.

Within 30 minutes after exercise, a snack should be eaten containing a 4:1 ratio of high-glycemic (sugar containing) carbohydrate to lean protein. The body releases a chemical called insulin in response to the carbohydrates. This drives the fuel into the muscle where it begins to heal it and raise the metabolism. Ideally, the recommended amount of carbohydrate is 1 to 1.5 g carbohydrate/kg paired with 10 to 20 g of high-quality protein.

The snack should be followed by a meal within 2 hours after exercise. This should be followed by snacks in 2-hour intervals up to 6 hours. The 30 minute snack can be replaced with the post workout meal if eaten within 30 minutes after the workout. The meal should be high in low- to

moderate-glycemic carbohydrate and lean protein, with lower amounts of fat and fiber to ensure timely fueling into the muscle cells.

Hydration should be 16 oz to 24 oz water or sports drink for every pound lost during exercise based on sweat rate.

Nutrition Basics

Below are some nutrition basics for supporting a healthy, fast metabolism. Consult a professional if you are an extreme athlete or have conditions such as diabetes, high blood pressure or kidney disease.

- 🌱 Carbohydrate intake should be 50-55% of calories depending on the activity. Choose whole, high-fiber grains as your carbohydrate meal choices, such as:
 - cereals
 - oatmeal
 - granola bars
 - crackers
 - whole grain pastas
 - brown rice
 - potatoes
 - whole grain bread

- 🌱 Protein intake should range from 1.4 g/kg to 1.7 g/kg for an extreme athlete, but will be far less for the moderate to committed exerciser (0.8-1.3g/kg) and the casual exerciser (0.8-1g/kg). Choose lean proteins such as:
 - chicken or turkey without skin
 - lean cuts of red meat
 - wild caught fish
 - low-fat dairy
 - eggs
 - beans
 - tofu
 - edamame
 - whey protein powders. Plant-based protein powders may have heavy metals from the ground that cannot be removed during manufacturing so be cautious when selecting.

- ✦ Fat intake should be the remainder of total calories, with an emphasis on anti-inflammatory, heart-healthy fats:

- nuts
- natural (non-hydrogenated) nut butters
- seeds (flax, chia)
- olive oil
- avocado oil
- medium-chain triglyceride (MCT) oil
- salmon/tuna



- ✦ Decrease intake of saturated (bad) fats such as fried foods, packaged meals and snacks with high saturated fat content on the nutrition label, and oils that are solid at room temperature such as butter, palm, and coconut oil. You may be surprised about the latter! Manufacturers have relied on tropical oils much more since trans fats were made illegal. They contain more saturated fat than butter and raises cholesterol and triglyceride levels according to studies. Choose MCT oil if you want the benefits of coconut oil without the risks, but do not heat it to high temperatures.
- ✦ Fluid needs are based on milliliters (mls) per kilogram (kg) of body weight. Active people need 35-40 mls per kg plus sweat rate as defined above. If you are on a fluid restriction due to pre-existing condition, always consult with a professional for custom recommendations. A good rule of thumb to determine if you are well hydrated is maintaining a pale yellow urine color throughout the day. Rely on water throughout the day and water/sports drinks during exercise as per the guides above.
- ✦ To enhance metabolism, eat frequent meals and snacks throughout the day and do not skip meals.
- ✦ Be sure to choose at least 3 servings of non-starchy vegetables and whole fruits each day to help reach your electrolyte, vitamin and mineral needs.
- ✦ Include high-sodium foods to replace sodium lost in sweat. Crackers, pretzels, baked chips, pickles, soups, and table salt can replace sodium losses. Consult a professional if you are on a low-sodium diet or blood pressure medication so that your sodium goal can be safely adjusted for you.
- ✦ Limit alcohol and fast-food intake as these cause inflammation.
- ✦ Avoid artificial sweeteners and use stevia in moderation as these have been shown to change beneficial bacterial balance in the intestinal tract. This can lead to inflammation and changes in the metabolism.

- ✦ Limit added sugars as these are harmful to metabolism. However, natural sugars found in foods already such as fruit have no limit unless exceeding carbohydrate needs or missing out on other forms of carbohydrates needed for health and metabolism.
- ✦ If you have been chronically under-eating and find it difficult to reach your calories goal, choose high-calorie, nutrient-dense options at meals. If focusing on body fat loss and you tend to eat too many calories, choose lower-calorie, whole foods frequently throughout the day.

Other helpful tips:

- ✦ Do not overtrain – when you are tired, rest. When stress levels are high and feeling run down, consistent lighter exercise can be more effective for fat loss because it does not threaten the body into starvation mode.
- ✦ Listen to your body and digestive system – if a food does not agree with you on a regular basis, try eliminating it. Food sensitivities create inflammation in the body. Inflammation changes the metabolism and increases risk of injury. If a digestive issue is present, always look for the underlying cause before relying on long term medications that only treat symptoms.
- ✦ If you are normal weight, focus on a body fat percent goal, not a weight goal. Studies show if you diet while normal weight the body immediately sees it as a threat and consumes muscle in place of fat. This is how many end up feeling “skinny fat”. It is possible to diet your way into overweight due to disordered eating practices while of normal weight. Simply control calories and create a calorie deficit by increasing exercise to slim down and tone. Allow your body to find its ideal weight on its own by eating healthy and exercising to build lean muscle and healthy metabolism.
- ✦ Muscle weighs more than fat. Many people who have lost a lot of muscle find they lose inches at the beginning of their journey as lost fat is displaced with sorely needed muscle as they heal their metabolism.
- ✦ If you are trying to lose weight, make sure you are not dieting alone as studies show that people who are trying to diet without exercise have greatest muscle and bone losses.
- ✦ Avoid doing only cardio – add some strength exercises to your routine, as you will lose less muscle and bone, and burn more fat out of the total weight lost.

Remember, “the journey of a thousand miles begins with a single step”. Do your homework, have patience, and commit to yourself - and you will get the results without the extremes. If you are thinking of quitting on your journey, remember why you started!

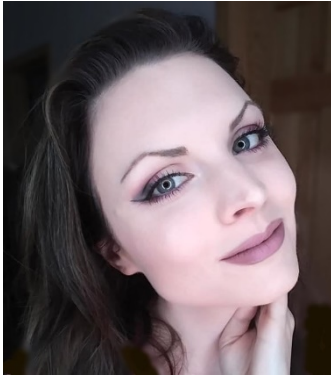
Take Home Points

- ✦ Extreme dieting and extreme exercising can be very unhealthy.
- ✦ Weight loss should happen gradually.
- ✦ A Registered Dietitian Nutritionist and qualified athletic trainer can help you come up with an individualized plan to make sure that your weight loss and exercise plans are healthy and safe for your body.
- ✦ It is important to eat and drink appropriately before, during, and after exercise in order to maximize your body's potential.

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Tricia Sauer, RDN, CDN is a registered dietitian nutritionist with 12 years of experience in both the hospital and community care setting. She specializes in sports nutrition and integrative and functional nutrition. She has been a consulting dietitian for the NFL since 2013 and the NHL since 2018, working to heal and prevent athletic injuries. She is the owner and founder of Buffalo Nutrition & Dietetics, PLLC, an RDN group based out of Buffalo, NY.

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