



# FEMALE ATHLETE HEALTH INITIATIVE

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*Presented by Sportsmetrics™ and Cincinnati SportsMedicine Research and Education Foundation*

## Maximizing Performance

### Part 2- Body Composition, Nutrition, and Rest/Recovery

What athletes need to know for their health and athletic performance



How you train for your sport in and out of structured practices and training has a profound effect on your athletic performance. In the first part of this series, we discussed the difference between aerobic and anaerobic conditioning, debunked the myths surrounding strength training, introduced how injury prevention can and should be incorporated into training, and finally in part 2, we will discuss how factors such your body composition, nutritional habits and rest/recovery can influence your athletic performance.

## Body Composition

Everyone is different. Even as athletes, there is no ideal body shape or body weight. As females, we often measure our worth and dieting success based off the numbers we see on a scale, but this is simply not the case. **Healthy bodies come in many shapes and sizes.** Where we carry that weight depends on many different factors. Genetics plays a large role in your shape and while physical activity can help influence your body composition, perhaps the single most important factor is not what we do to our bodies with training for our sports but what we put in them. Yes, we're talking about food! **Food is not only fuel for athletic performance, it's essential to your brain health and it can even help you recover from injury faster.**



**Body frames**... There are 3 main categories of bodies:

*Ectomorph* – Ectomorphs have **small yet long frames**, with **low body fat**, and tend to have fast metabolisms. These bodies often struggle to put on weight and have a **harder time gaining muscle**.

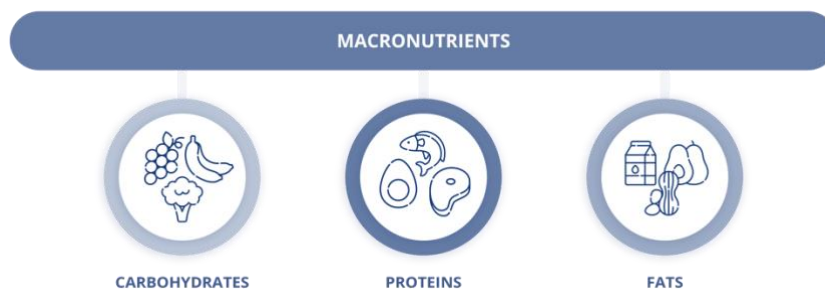
*Mesomorph*- Mesomorphs are generally proportionate. They can gain and lose weight easily and most resemble a typical **“athletic build”** with shorter more muscular limbs. Mesomorphs also have a higher percentage of fast twitch muscle fibers making their build **ideal for power and strength** but perhaps not so great for endurance.

*Endomorph*- Endomorphs carry a **higher percentage of body fat** naturally and tend to have a curvy build. With this, endomorphs **easily gain weight**. This body type works best when **metabolism is optimized** through daily exercise and proper nutrition.

## Nutrition

Food is the means by which we receive the nutrition we need for our bodies to function properly. Food = energy. What we put into our bodies in the form of food and drink is directly related to what we can expect to get out of them. In the previous series on relative energy deficiency in sport and the female athlete, we dove into detail on the concept of energy availability. In short, a deficiency in energy is related to the balance between dietary energy intake (EI) and the energy expenditure (EE) required to support homeostasis, health and the activities of daily living, growth, and sporting activities.

Macronutrients are the building blocks for proper nutrition.





**Carbohydrates** - 50 to 55 percent of your diet should contain carbohydrates

*whole-grain breads/cereals, leafy greens, figs, lentils, and kidney beans*

**Protein**- 10 to 15 percent should contain lean protein

*greek yogurt, tofu, nuts, beans, seeds, lean meats*

**Fats**- 25 to 30 percent should come from healthy fats

*cheese, milk, avocado, olive oil, nuts*

#### HERE ARE SOME ADDITIONAL IMPORTANT POINTS:

- Carbohydrate intake needs to match the energy demands of sport
  - Active females need a **minimum 1,800 kcal/day**.
  - Active training upwards of 10+ hours/week need **>3,000kcal/day**
- Adequate protein is necessary for maintaining and repairing muscle and bone, and good health.
  - Protein needs can range from **1.2-2.0 g/kg body weight per day** and intake should be spread throughout the day.
- Female athletes who energy-restrict or follow specialty diets are most likely to have low protein intakes.
- The micronutrients most likely to be low in the diets of active women are iron, zinc, calcium, vitamin D and the B-vitamins (folate, B-6, thiamin, riboflavin)
- consuming at least 1,300 mg of calcium per day and increasing levels of vitamin D can reduce risk of stress fractures, infectious illness, inflammation and impaired muscle function.
- Vegetarian and vegan athletes should make a concerted effort to include iron, protein and vitamin B12 in their diets to get the most out of their workouts, and to stay as healthy as possible.

## Rest and Recovery

In order to perform your best, your body needs time to recover. In this section we will discuss how to optimize your rest time to recover faster. All athletes know that feeling of intense muscle soreness that goes deep into your body. You had a hard game or an intense lifting workout a day or two ago and now the soreness is setting in. There's a name for this, its call **delayed onset muscle soreness (DOMS)**. While muscle soreness can be painful, it's not dangerous and it doesn't necessarily mean that you're injured. Maybe your muscles aren't sore, but in your next workout or competition, you're fatigued and you just can't seem to make that sprint time or you simply can't produce enough power. These are all signs that you need more rest for your body to catch up and recover. If you don't give yourself ample rest, you risk injury. **Overuse injury is one of the most common types of injuries that female athletes face** and most of this boils down to the concepts of RED-S as previously discussed.



### Here are some tips to ensure proper rest and recovery:

#1 SLEEP – Sleep cannot be emphasized enough. Sleep is when your body is repairing the damage from your workout or competition. As an *athlete, you need 8-9 hours of sleep a night* and upwards of 10 if you are a teen. If there is any one thing you can do to ensure that you are recovering, it's sleep!

#2 Stretching / Rolling out -these two concepts are nothing new to athletes, but studies show that **stretching and rolling out muscles after exercise significantly reduces muscle soreness** and DOMS. Another tip is compression. Try a pair of compression leggings after a hard game or workout. The compression will help prevent the swelling and build up of acid in your legs that causes muscle soreness.

#3 Nutrition- Specifically **carbohydrates** and **proteins**. Your body utilizes carbohydrate stores in your body during exercise so these need to be replaced following exercise so that your body is ready to take on exercise stress again the next day. In addition, **protein is essential to rebuilding muscles** so after an intense bout of strength training, it might be a good idea to try and get an extra serving of protein about 30 minutes after your training.

## Talk with your doctor if...

- *If you are experiencing any pain while exercising*
- *If you have not been cleared for physical activity by a physician*
- *If you have had fluctuations in your weight, menstrual cycle, or if you have a restrictive diet*

Diagnosis and treatments should be performed by a health care professional. Diagnosis and treatment will be different for every athlete depending on their risk factors. If you or an athlete you know is at risk, talk with your doctor to find resources in your area.



### Sources:

Manore, MM, Sports Science Exchange, 2017

Mountjoy, M, et al., IJSNEM, 2018

Boston Children's Hospital Female Athlete Series: Nutrition



For more on our female athlete health initiative educational series visit us online at [www.sportsmetrics.org](http://www.sportsmetrics.org)