



# CENTER FOR THE FEMALE ATHLETE

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

## Maximizing Performance

### Part 1- Conditioning, Cross Training, & Strength Training

What athletes need to know for their health and athletic performance

How you train for your sport has a profound effect on your athletic performance. In this series, we will discuss the difference between aerobic and anaerobic conditioning, debunk the myths surrounding strength training, introduce how injury prevention can and should be incorporated into training, and finally in part 2, discuss how lifestyle factors such as your nutritional and sleep habits can interfere with your athletic performance.

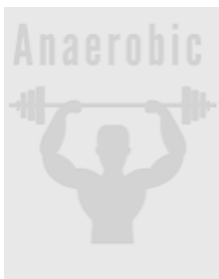
## Aerobic vs Anaerobic Conditioning



### Aerobic training

- involves the presence of **oxygen**
- primarily works type I muscle fibers also known as **slow twitch fibers**
- responsible for **long duration** and repetitive muscle contractions
- increases **muscle endurance** and cardiac efficiency
- this type of training can be sustained for a **long period of time**

*examples: distance running, swimming, cycling*



### Anaerobic training

- does NOT involve the presence of oxygen
- primarily works type II muscle fibers also known as **fast twitch fibers**
- gives that **muscle burn** feeling
- increases **muscle size** and **strength**
- you **cannot sustain** anaerobic exercises for long periods of time

*examples: weight lifting, sprints, HIIT*

## *Why are both aerobic and anaerobic training important to performance?*

**Most sports rely on a mix of aerobic and anaerobic capacities.** Depending on your specific sport, some aspect of training will be more important. Aerobic is more important in sports that require more constant motion like running up and down the field in soccer, while sports such as track and field require shorter bouts of intense power and speed like pole vaulting. It might not be necessary for a golfer to be able to run a mile without stopping but it certainly is for a cross country athlete.

*Cross training* into more aerobic or anaerobic zones for your sport is essential to maintaining a healthy and balanced fitness level. Aerobic training will **help improve your muscle capacity to uptake oxygen** therefore improving your overall muscle capacity to produce forces. On the other hand, anaerobic training will help build strong muscles that will be able to sustain forces over longer periods of time, assisting in your overall aerobic capacity.



## Strength training

Many female athletes fear that strength training will make them bulky therefore inhibiting their performance, not to mention leading them to an unflattering bulky physique. **This is a myth!** There is a lot of misinformation regarding optimal weight and leanness for performance that has been spread to female athletes across all sports. In this section we will debunk some of the myths surrounding strength training for female athletes and explore some of the options available to achieve stronger muscles.





## Myth 1: Lifting weights will make my muscles bulky

**DEBUNKING #1** Muscle growth is just one small result of weightlifting and happens very gradually over time given that the weight is heavy enough and that the athlete is receiving proper nutrition. Aesthetically speaking, the type of strength training that female athletes need is not the bulking weight training that most think is involved.



### General Guide to Strength Training:

- **3 sets of 8-10** repetitions. The last of the 8-10 should be until muscle failure
- Practice strength training **2-3x a week** on nonconsecutive days
- Exercises should **change every 2-3 weeks** to keep them challenging

## Myth 2: Being lean is more important than muscle strength for speed

**DUBUNKING #2** Strength is your muscles ability to produce force. Just as you learn in basic physics courses, the more force you can apply, the faster you can go. This lesson applies directly for speed training in athletes. The stronger you are and the faster that you can produce that force, the faster you will run and the quicker and more agile you will be. It's as simple as that! Leanness has more to do with your body type and diet than it does on your specific training habits (more on this in our nutrition for performance series).

## Myth 3: Strength training involves lifting heavy weights

**DUBUNKING #3** There are countless ways to gain muscle strength. While weightlifting is an effective and often popular one, it is by no means the only way strength training can be accomplished.

*Here is a list of strength training exercise options:*

*Plyometrics* -jumping exercises help you increase your power and quickens the rate that your muscle fire. The added stress from jumping also helps to create strong bones.

*HIIT* -High intensity interval training involves lower weights with higher repetitions and limited rest time.

*Resistance bands*- utilizing resistance bands instead of traditional weights is a great alternative that requires far less equipment.

*Body weight*- exercises utilizing your own body weight such as planks and push ups can be just as effective for gaining strength.



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.



For more on our Center for the Female Athlete, visit us online at [www.sportsmetrics.org](http://www.sportsmetrics.org)