

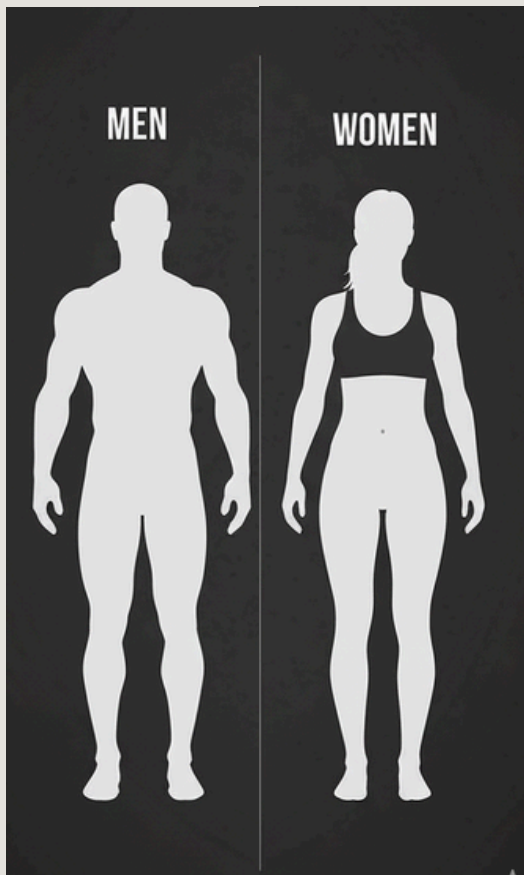
Women Are Not Small Man

“Stop eating and training like one.”

“What are women actually made of.”

Body Mass

The number we see on a scale is our weight, which is different from body mass. Weight is determined by gravitational pull. For example, we weigh less on the moon compared to on Earth. Mass is the actual elements that make up our body, such as bone, muscle, fat and organs. Body weight changes when we take more fluids on a given day, or when we eat throughout the day. On the other hand, body mass does not change so easily as it requires tissue loss or gain.



Muscles

When we compare the muscle tissues from men and women – such as those on the shoulder, biceps or quadriceps – they are actually almost the same between men and women. Although men and women have almost an identical percentage of muscle composition, specifically Type I (endurance) and Type II (power), there is a difference in the largest muscle fiber in women and men. The largest muscle fiber in women tends to be of Type I (endurance) while men’s largest muscle fiber is of Type II (power).

When we do head-to-head strength comparison between men and women, women usually show that their strength is between 40% to 75% of men. A woman’s upper body is about 52% as strong as a man’s, and 66% as strong as a man in her lower body. For trained women, their strength is usually higher up to 70% – 80% of a man’s. Women tend to carry more lean muscle tissue below the waist, giving them more power from their hips and legs.



Athletic World

In the sports world, fat is usually shunned, while muscle is always extremely valued. Even though what we were made of is important, but it is worth taking into account the impact of what we are made of on what we want to do. For instance in a bike climb, a man with bigger upper body tend to be slower or require more energy compared to a woman with lighter upper body and strong hips and legs.

We can see that women usually dominate in sports that require more endurance such as open water swimming. The result is more distinctive when the swim distance gets longer. In 2013, Diana Nyad was the first person to swim 110.86 miles within 52 hours and 54 minutes between Cuba and Florida. It seems that the more buoyant fat compared to muscle provides an advantage to her in the open water.

Fats

Most people think that fat under our skin is an unwanted element in our body. However, it is these fats that act as padding and generate hormones to keep our body functioning sustainably. These accumulated energy that we store creates adiponectin that regulates insulin, which is an essential hormone to help our body use and store blood sugar.

Those essential fats that we don't see when we look in the mirror are stored in our nerves, bone marrow and organs. In men, essential fat is about 4%. On the other hand, it is 12% in women. The big difference is because women are designed to reproduce, and a woman's breasts are mostly fatty tissue.

How much fat men and women carry generally depends on their lifestyle. But, we can't ignore the fact that we are built differently from individual to individual. People who naturally look larger carry more body fat. These are the endomorph body type. Ectomorphs are the opposite, who are naturally slimmer. There are those who fall in the middle of the range – mesomorphs. They tend to be naturally muscular and medium build. However, our activity level affects our body fat levels and distribution. Activity level could impact the dominance of one body type over another.

In general, a healthy woman's body fat should fall in between 12% to 30%, while it should be 5% to 25% for men.





Hormones

During aerobic exercises, women and men use energy differently due to their hormones. The estrogen and different proteins in women's muscle mitochondria let women rely less on carbs for energy and use fats as energy instead. It is a good thing for aerobic exercise since fat is the main fuel for aerobic exercise. However, it is harder for women to push beyond their boundary during anaerobic exercises because the body is simply unable to get the glycogen it needs. Such exercises require carbs as instant fuel for the high intensities.

Since men have bigger type II muscle fibers, they are able to burn more glucose in the absence of oxygen. It makes men to outperform women in short and intense burst exercises. However, men will accumulate more lactate during these high intensity exercises which causes muscle acidity. It is the burn sensation on muscles that forces men to slow down, plus longer recovery time is needed.

Aerobic & Anaerobic

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On the other hand, women have larger type I muscle fibers that use fat as fuel more efficiently. Women may use bigger relative proportion of carbs consumed during exercise, so eating carbs during exercise can be quite beneficial.

Capacity for Cardio & Endurance

Women have smaller hearts (about 26% lighter than men), smaller heart volume, smaller lungs (12% less volume than men) and lower diastolic pressure. This means that women have lower maximum heart rates and pump less oxygenated blood with every beat. Women have to breathe more often to compensate for the less oxygenated blood. As such, a woman's diaphragm and intercostal muscles between her ribs need to work harder and use a lot of energy. When racing against men, women need to push the pace and breathe harder because there is less blood flow going to the legs.



Resources: ROAR, Stacy T. Sims, with Selene Yeager.