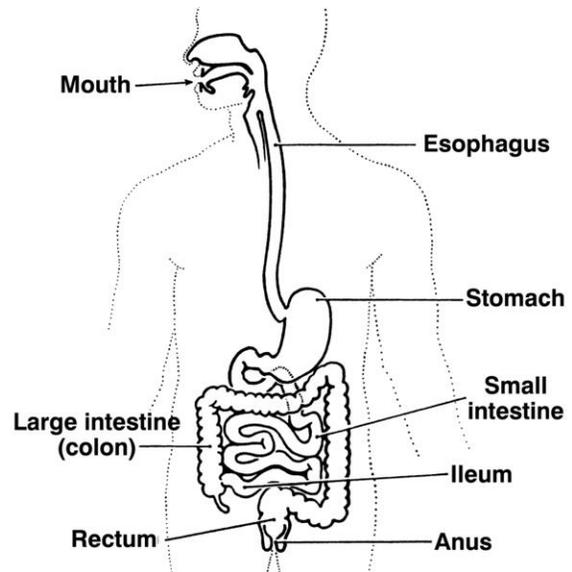


Most of America gives little thought to bowel control. Bowel control is a complex process involving the coordination of many different muscles and nerves.

Anatomy of the bowel

The bowel is part of the digestive or gastrointestinal system. Its purpose is to help the body absorb nutrients and fluids from the foods we eat and drink. After taking out everything the body needs, the bowel then expels the leftover waste.

The first part of the bowel is the small intestine, sometimes referred to as the small bowel. This is where the useful nutrients are absorbed from the food you eat. The small bowel delivers the waste to the colon, or large bowel. The colon is a 5-6-foot-long muscular tube that delivers stool to the rectum. As the stool moves through the colon, the fluids are removed and absorbed into the body.



The consistency of the stool depends on many things, such as:

- how long the stool stays in the colon
- how much of the water has been absorbed from the waste
- how much fiber and fluids are the person eats.

What is the right stool consistency?

Stool consistency can vary from hard lumps to mushy to very loose, watery stool. The best and easiest consistency of stool is soft, like toothpaste; you can attain this consistency by adding fiber and decaffeinated fluids to your diet.

Fiber helps move waste through the colon because the human body is not able to digest it. In other words, fiber adds 'bulk' to the stool. Most Americans do not have enough fiber in their diet. The body needs about 25-35 grams of fiber

to keep the bowels healthy and moving. If your bowel movements are too loose, fiber can make them firmer; on the other hand, if your stools are too hard, fiber can make them softer.

Decaffeinated fluids (decaffeinated soda, juice, water) determine how soft your stools are and how easily they are expelled. If the colon does not have enough fluids to absorb from the waste, the stool will be dehydrated, resulting in hard, lumpy stool that is difficult to pass.

Caffeine is a diuretic. It draws fluid from your body and excretes it as urine. This dehydrates your body which forces the colon to pull extra water from the stool. Too much caffeine may dehydrate your stool and it will become hard, lumpy, and difficult to pass. For every cup of caffeinated fluids, Michigan Bowel Control Program recommends that you drink 2 cups of decaffeinated fluids. Do not rely on the foods that you eat for fluid. The water in your food is considered “bonus fluids”.

It is rare for a person to drink too much fluid. Drinking too much fluid may be a problem for people who cannot hold urine, or people with certain heart or kidney diseases. In a healthy person, any excess fluid the body doesn't use will just be removed from the body as urine. If you have a question about how much water you can drink to stay healthy ask your doctor.

In most adults without bowel disease, a diet high in fiber that includes 1-2 quarts of decaffeinated fluids a day will produce soft stools that are easy to pass.

Remember: fluid and fiber work together to encourage healthy bowel habits. Eat a diet high in fiber **and** drink plenty of decaffeinated fluids so your stools are “healthy” with the consistency of toothpaste being squeezed from the tube - soft and free flowing.

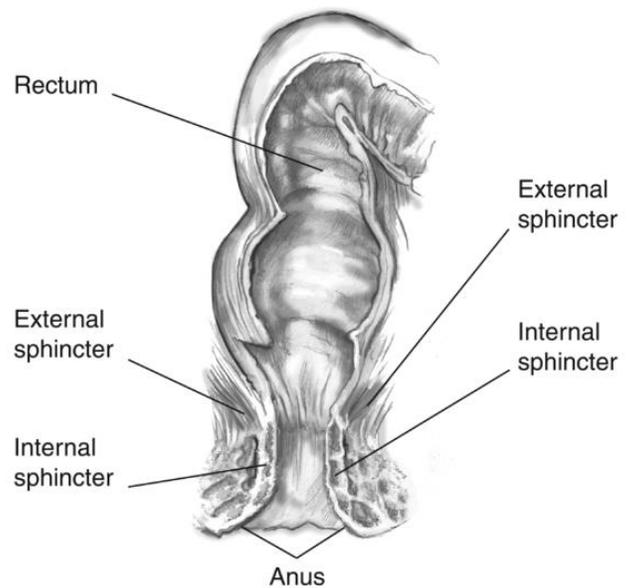
What are normal bowel habits?

The speed at which food moves through the digestive system varies. Depending on the type of food present, it can take an average of one to three

days to process. Up to 90% of that time is spent in the colon. People have many different ideas about bowel habits. Normal bowel habits range from 3 times a day to 3 times a week. Not everyone has a bowel movement daily.

Some people have difficulty moving food through the colon. We label this problem as **slowed or delayed colonic transit time**. Sometimes, medication can help speed up transit time. On occasions, surgery may be necessary.

At the end of process in the colon, stool moves to rectum. There the stool must pass through two major muscles to exit the body; the internal sphincter muscle and the external sphincter muscle. The internal sphincter muscle is “involuntary”. It automatically relaxes and opens at the top of the anal canal to allow stool to pass through. The anal canal has sensitive nerves cells and as the stool enters canal these cells sense its presence and produce by the sensitive nerve cells. People with normal nerve sensation have the urge to have a bowel movement.



The external sphincter muscle is a “voluntary” muscle; you have control over this muscle. It assists in keeping the stool in the rectum until you are ready to have a bowel movement. In fact, squeezing the external sphincter muscle pushes the stool out of the anal canal and the rectum relaxes. The urge to have a bowel movement is gone until the next colon contraction hits the rectum.

Frequent holding of stools can cause constipation and desensitization of nerve cells. The longer the stool remains in the colon and rectum, the more fluid is absorbed, and the harder the stool becomes. This is why it is important to move your bowels when you feel the urge to have a bowel movement. A person with very loose or runny stools (diarrhea) will need urgent access to a restroom.

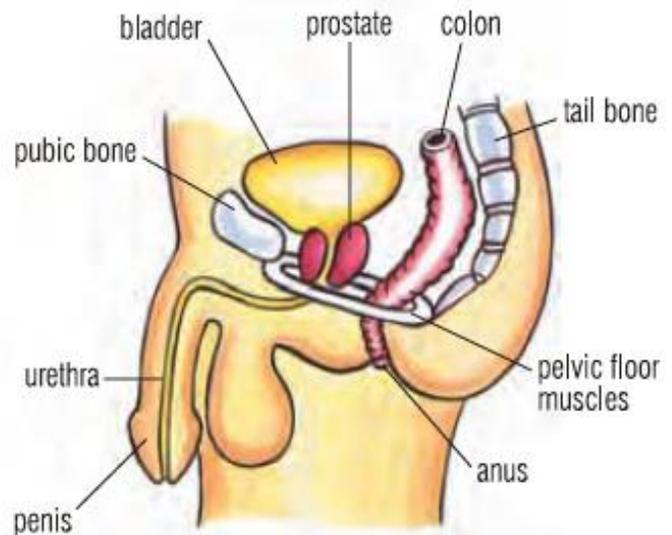
Loose stool can slip through the sphincter muscles quickly without the person knowing.

Why are the muscles of the pelvic floor important?

The ability to retain and expel stool is dependent on the muscles of the pelvic floor. The pelvic floor muscles 'hold' your organs where they should be and aide in many actions such as childbirth and having a bowel movement. These muscles are under voluntary control. The two major muscles of the pelvic floor are the **levator ani muscle** and the **puborectalis muscle**.

The **levator ani** muscles arise from the pelvic sidewalls and run downward to form a funnel in the pelvis, helping to support the anal canal, the urethra and in women, the vagina. These muscles are in close contact with the sidewalls of the pelvic organs.

The **puborectalis muscle** provides a ring of support around the anal canal at the small end of the funnel made by the levator ani muscle. (the image shows these muscles in a male body) It has a "U" shaped configuration creating an angle between the anal canal and the rectum. Under resting conditions this angle is 90°, but during straining and moving your bowels this angle moves to 135°. If these angles are not correct, it may become more difficult to have a bowel movement.



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What happens if the bowels do not function as they should?

Bowels that do not work well may cause several disorders. The most common ones are constipation and incontinence.

Constipation

The levator ani and the puborectalis need to coordinate properly in order to expel contents from the anal canal. If you don't have full control over your pelvic floor muscles, or if they spasm frequently, you may develop constipation. When the muscles aren't working properly, they can block the anal canal, making it very difficult to have a bowel movement. This can be called an outlet obstruction and pelvic floor / rectopubalis dyssynergia. It is like pushing through a closed door.

Physical therapy can assist with retraining the pelvic floor muscles to coordinate properly, thus returning to the proper anal-rectal angles. They can also assist with relaxing your muscles if they are spasming. Sometimes, simply being able to relax will assist with proper muscle functioning. Relaxation, distraction (from focusing on the bowel movement), and meditation techniques can be learned to assist with this process.

Physical therapy is a time commitment for the patient. You will have to exercise at home on a daily basis in addition to regular appointments with a physical therapist.

Bowel incontinence

Pelvic muscle weakness can be a cause of bowel incontinence. The puborectalis provides a ring of support around the anal canal. The levator ani connects to the sidewalls of the pelvic floor organs and funnel down the pelvis. If these areas become weakened or do not function properly, stool can slip through the musculature and out the anal canal. Physical therapy can provide exercises to assist with strengthening the muscle. Physical therapy is a time commitment for the patient. You will need to practice the exercises at home on a daily basis.

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Author: Terri O'Neill RN, BSN
Reviewer: Jenifer Crawford RN, BSN

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