

Exercising During Pregnancy With Diabetes

By Gary Scheiner MS, CDE

Physical activity does remarkable things for people with diabetes: lowering blood sugar, improving insulin sensitivity, controlling blood pressure and cholesterol, stabilizing emotions, etc, etc, etc. But what about during pregnancy? Should you continue exercising the way you were previously? Is this the right time to start exercising? Do special limits need to be placed? Do the risks of exercise outweigh the benefits? Read on to find out.

In 2002, the American College of Obstetricians and Gynecologists (ACOG), the foremost medical authority on female sexual & reproductive health, published guidelines for exercise during pregnancy. Contrary to the long-standing belief that exercise may be more problematic than beneficial during pregnancy, ACOG's guidelines state that in the absence of contraindications (health problems that may pose a significant health threat), physical activity should be *encouraged* rather than discouraged during pregnancy.

There are many reasons to be physically active during pregnancy.

Besides all of the well-known benefits of exercise, physical activity offers some special advantages during pregnancy. Regular physical activity helps to reduce back pain, constipation, bloating and swelling. It increases energy and improves your mood. It is an effective tool for reducing after-meal blood sugar spikes. It leads to more restful sleep and helps minimize weight gain. By staying fit and strong through your pregnancy, you will have a much easier time coping with the rigors of labor. And though it may not be foremost in your mind at the moment, your return to the "pre-pregnancy you"

after you deliver can happen much faster if you've stayed active.

One of the major risks of pregnancy when you have diabetes is excessive growth of the baby (fetal macrosomia). This can lead to musculoskeletal defects and a very complicated birth. Research has shown that women who exercise regularly during their pregnancy tend to have babies that are several ounces lighter than babies born to moms who do not exercise. Given all the work done to avoid fetal macrosomia (including tight blood sugar control), this is obviously an important benefit.

Safety First

Of course, no woman wants to do anything that might be harmful to her baby. So what is considered safe when it comes to exercise?

ACOG's recommendation for previously inactive women is to engage in 30 minutes of moderate-intensity, low-impact aerobic exercise at least three times per week. This includes brisk walking, swimming, water exercise, low-impact land aerobics, armchair exercises, light weight lifting, and use of stationary equipment such as treadmills, bicycles, and elliptical trainers. Water exercise is very popular among pregnant women because of the comfort created by water's buoyancy and its cooling effect on the body.

For women who exercised regularly prior to becoming pregnant, it is usually fine to continue with the same activities... even if they are longer, more frequent and slightly more intense than the activities mentioned above. Participation in mildly competitive activities by highly athletic women is also permissible as

long as it is well-tolerated and does not produce any adverse reactions (see below).

However, there are certain activities that should be avoided during pregnancy. They include scuba diving, high-altitude activities (sky diving, skiing, mountain climbing), and activities that involve a major risk of falling or abdominal trauma. So... **DODGEBALL IS OUT.** Strength training (weight lifting) is usually permissible during pregnancy if it was done beforehand. However, it is essential to practice sound lifting technique: never holding your breath during a lift, avoidance of maximal lifts (high-rep / low-weight is best), and avoidance of body positions that involve lying flat on the back or with the head below the level of the heart. Weight machines are generally better to use than free weights during pregnancy due to the increased risk of hyperextension injuries.

Any activity that causes a significant increase in blood pressure or adrenaline is best avoided. These include highly competitive or intense sports, lifting very heavy weight, and all-out sprints. Marked increases in blood pressure can contribute to preeclampsia and may compromise the health of your baby. Norepinephrine (a component of adrenaline) increases both the strength and frequency of uterine contractions and may lead to premature labor. Maximal intensity exercise is also associated with temporary fetal bradycardia (abnormally slow heart rate in the baby) as well as hyperthermia (increased temperature). Submaximal/moderate aerobic exercise has not been shown to cause these types of problems.

There are also a few reasons to avoid exercise entirely:

- incompetent cervix (when the cervix is weak and opens too early)
- cerclage (when the cervix is sewn shut until soon before the due date)

- expecting twins or triplets (due to risk of premature labor)
- persistent 2nd or 3rd trimester vaginal bleeding
- placenta praevia (when the placenta is positioned directly above the cervix)
- premature labor
- ruptured membranes
- pregnancy-induced hypertension.

Exercise should be stopped immediately and your physician should be contacted if any of the following occur:

- Vaginal bleeding
- Headache or chest pain
- Sudden calf pain or swelling
- Preterm labor
- Decreased fetal movement
- Amniotic fluid leakage

Blood Sugar Control During Exercise

Because physical activity increases glucose uptake by muscle and insulin sensitivity at the cellular level throughout the body, precautions must be taken to prevent hypoglycemia. When exercise is to be performed after a meal, this can be achieved by reducing the dose of mealtime rapid-acting insulin. The amount of the reduction should be based on the nature of the exercise. Brief, low-intensity forms of exercise may require a reduction to the standard dose of only 20-25%. Longer, more intense forms of exercise may require a reduction of 50% or more. Careful record-keeping will help you to fine-tune your adjustments in order to achieve the best possible control.

When exercise is performed before a meal (or more than two hours after a meal), it is usually best to leave the insulin doses alone and simply take extra carbohydrate prior to the activity – ideally in the form of rapid-acting/high-glycemic-index food or drink. Sports drinks,

crackers, cereal and glucose gel can work quite well in this regard.

As with the insulin adjustments, the *amount* of carbohydrate needed can vary considerably. It is usually based on body size, the nature of the activity, as well as the blood sugar level (and direction it is headed) before exercising. For example, a woman who weighs 150 lbs will require approximately 10-12g carb to offset the sugar burned during a casual 30-minute walk. However, if the blood sugar is elevated prior to walking, little or no carb is needed. If the blood sugar is below target, additional carb will be needed. By contrast, a 200-pound woman who is swimming at a moderate pace for 30 minutes needs approximately 30g carb to offset what she will burn up. If her blood sugar is rising prior to swimming, she will need less carb. If it is dropping, she will need more.

Approximate carbohydrate needed for each 30 minutes of activity

	100 lbs	150 lbs	200 lbs	250 lbs
Light Activity	8-10g	10-12g	12-15g	15-18g
Moderate Exercise	10-15g	15-20g	20-25g	25-30g
Heavy Exercise	15-25g	20-30g	25-35g	30-40g

For a more detailed chart that lists the amount of carbohydrate burned in various forms of physical activity (broken down by time and weight), see my book: [Think Like A Pancreas: A Practical Guide to Managing Diabetes with Insulin.](#)

<http://www.integrateddiabetes.com/webstore/index.php?app=ccp0&ns=prodshow&ref=Pancreas>

A quick note about exercising with elevated blood sugar: It is usually OK to do, as long as you are not ketotic. Ketones are a sign of severe insulin deficiency. Never exercise if ketones are present, and contact your physician immediately. However, if you have an elevated blood sugar but are not ketotic, it is usually safe to exercise... as long as you take plenty of

fluids and address the high blood sugar with a conservative correction dose of insulin.

Special Exercise Considerations

This is a special time in more ways than the obvious ones. And you know what they say... “Special times call for special measures.”

During your second and third trimesters, don’t expect to be able to achieve the same level of exercise performance as you did before your pregnancy. This is due to increased oxygen requirements (you’re breathing for you and your baby!) and the pressure of the enlarged uterus on the diaphragm. During the latter stages of pregnancy, even a highly-trained athlete may only require a brisk walk to reach a moderate level of intensity.

One of the best ways to gauge your exercise intensity is through “Rating of Perceived Exertion,” or RPE. This is based on how you feel about the intensity of your workout while you’re doing it. For those in reasonably good shape, an RPE in the 12-15 range is appropriate. For those who are relatively new to exercise, the 10-13 range is perfectly fine. Just recognize that as you (and the baby) grow, less speed/intensity/duration will be required to reach the same RPE.

Rating of Perceived Exertion Scale (RPE)	
6	
7	Very, very light
8	
9	Very light
10	
11	Fairly light
12	
13	Somewhat hard
14	
15	Hard
16	
17	Very hard
18	
19	Very, very hard
20	

Part of the reason to limit exercise intensity is because overheating can be particularly dangerous to the baby. Wear loose, comfortable clothing when you work out, and exercise in cool, well-ventilated places. Avoid exercising outdoors on hot/humid days. Drink plenty of water before, during and after exercise; don't wait until you become thirsty to drink as this means that you have already become dehydrated.

Various hormones produced during pregnancy cause the ligaments that support your joints to become relaxed. Although this is helpful in preparing for delivery, it also puts you at risk for over-stretching and hyper-extension injuries. During exercise, it is best to avoid sudden changes of direction, bouncing, and high-impact. And take special care not to overstretch before and after your workouts.

As the baby grows, extra weight on the front of your body will shift your center of gravity and place extra stress on the pelvis, lower back, calves and hamstrings. You may become less stable and susceptible to falls, so play it safe in terms of balance in the later stages of your pregnancy.

After delivery: Kegel Exercises

Following childbirth, it is common to have loose and weak muscles in the “pelvic floor”. In addition to supporting the organs in the pelvic region, these muscles are responsible for controlling urinary flow and bowel movements, establishing vaginal tone, and generating sexual orgasm.

Restoring strength and tone to the pelvic-floor muscles can help with many aspects of daily life. For more than 60 years, “Kegel” exercises have been used for this purpose. Like most forms of training activities, these exercises may

take 6-8 weeks to yield a noticeable improvement, so it takes some perseverance.

Here is how to perform the Kegel exercise:

1. Contract your anal muscles as you would to prevent a bowel movement. Don't contract any other muscles – just the anal sphincter. You can see if you are performing the exercise correctly by placing one finger inside the vagina and feeling the contraction.
2. Hold the contraction for four seconds, then relax for four seconds.
3. Keep repeating this sequence for about five minutes.
4. Perform several times each day.

For most women, a reasonable amount of exercise is very healthy during pregnancy... mentally as well as physically. I still remember the tremendous comfort my wife felt when she got together with her fellow moms-to-be at the local Y for water aerobics. For her, it wasn't so much the exercise it was the camaraderie. Just be sure to talk with your obstetrician early on to find out if there are any special precautions that you may need to take when it comes to exercising during your pregnancy.

Note: Gary Scheiner MS, CDE is owner and clinical director of Integrated Diabetes Services, a private practice specializing in blood glucose regulation and advanced self-management training for people who utilize intensive insulin therapy. He is both an exercise physiologist and a Certified Diabetes Educator. One of the specialties of his practice is pregnancy and type-1 diabetes. He and his staff of CDEs offer their services remotely via phone and the internet for clients throughout the world. A devoted husband and father of four, Gary has had type-1 diabetes for 25 years and makes extensive use of both pump and CGM technology. For more information, visit www.integrateddiabetes.com, or call 877-735-3648.