

External Counterpulsation (ECP)

Many genetic and lifestyle factors can cause your heart to become less efficient over time. Serious conditions such as angina and congestive heart failure can be relieved by a non-invasive therapy called external counterpulsation.

Expertise in Matters of the Heart

In order to pump blood throughout the body, the heart requires its own supply of blood, which is delivered through coronary arteries. When the coronary arteries become narrowed or blocked and the heart does not receive enough oxygenated blood, it responds with a painful signal called angina.

Narrowed or blocked coronary arteries are treated with nitroglycerin or surgery to decrease pain and to prevent permanent damage to the heart muscle that can lead to heart failure. External counterpulsation (ECP) is an alternative procedure that is based on the idea of detouring around a blockage. The body is capable of opening branches of other nearby vessels to divert blood away from an unusable channel. This process, called collateral circulation, happens slowly in most people, so ECP is used to speed it up.

ECP is particularly useful to people who:

- Have angina symptoms
- Have had previous invasive procedures but still have pain
- Are no longer relieved by the use of nitroglycerin
- Are no longer a candidate for an invasive procedure

How it works: External counterpulsation is a series of compressions on your lower body that occur in time with your heartbeat. The compressions are delivered using inflatable cuffs, fastened to your legs with velcro, that are similar to those used to measure blood pressure.

While your heart muscle is resting (diastole) between beats, air is pumped into the cuffs beginning at your calves and ending at your thighs and buttocks. This wavelike pressure sends blood back toward your heart, arriving exactly as your heart relaxes. A fraction of a second before your heart's next beat, the cuffs instantaneously deflate, allowing the heart to pump blood through empty blood vessels with minimal resistance. ECP therapy is performed in hour-long sessions, five days a week, for seven weeks.

Because ECP lowers pressure during systole and increases pressure during diastole, your heart doesn't have to work as hard to supply blood to your body. By the end of the treatment period, your body will have been "trained" to improve the circulation of blood and you may see symptomatic improvements.

Patient preparation: You must understand that ECP requires consistency; you will be committing to spend an hour and a half, five days a week for seven weeks, to receive this treatment. Interruptions to this schedule should be avoided. Please follow these instructions before each treatment session, unless your physician instructs you otherwise:

- Please arrive 15 minutes early so you can change into your leggings, weigh and be ready for your scheduled time.
- Again it is important to come to every treatment; remember you will always have weekends and holidays off.

- You may eat a light meal before coming. Please avoid eating 2 hours before your treatment.
- If you take a diuretic (water pill) such as Lasix, please take it 6 hours before your treatment for an afternoon appointment or for a morning appointment take it after your treatment.
- Always wear your leggings. You may launder them as needed. Men should wear briefs and women close-fitting underwear. Wear an open-neck shirt or blouse, no turtlenecks please.
- You will be asked about your angina symptoms and nitroglycerine usage each day allowing us to monitor your progress.
- Please be sure to let us know if you have any medication changes, including over the counter and prescriptions.
- Feel free to bring things to pass the time such as books, CD's, movies, etc. We provide CD players and headphones. You may also have a family member, or friend come in and keep you company - remind them that it is for one full hour.
- From time to time, doctors, nurses, or potential patients may stop by who are interested in ECP. Let us know if this is a problem for you.
- Let us know if you have problems or concerns, whether during your treatment or during the 24 hours between treatments. We want to know about everything from a slight skin rub to chest pain.

(continued on back)

Heart Center of the Rockies, the region's premier heart center, is dedicated to providing a comprehensive program of advanced cardiovascular care throughout Colorado, Wyoming and western Nebraska.

What to expect: A patient undergoing ECP will typically receive a one hour treatment everyday (Mon-Fri) for 7 weeks, for a total of 35 treatments. However, this schedule can be modified for patients wanting treatments but who live outside of Fort Collins. Your body needs each treatment to improve; however, we realize things happen and any missed treatments will be made up at the end. Your treatment time will be the same everyday for 7 weeks. Any insurance authorizations will be taken care of prior to beginning ECP.

Orientation: Patients who are referred to ECP will be contacted to set up a 20-25 minute orientation with the ECP therapist. During this time informational handouts will be given, and a video on the procedure will be viewed, and your questions will be answered. Consent forms will be signed and your daily treatment time will be scheduled. You will also receive your leggings that need to be worn daily for treatments.

During your 7-week procedure: Upon arrival to your treatments you will change into your leggings, use the restroom and weigh on the scale. During the procedure you will be sitting up at a slight angle on a massage table bed. Your vitals signs, blood pressure, heart rate, and oxygen, will be recorded and monitored before, during, and after the treatments. Electrodes will be placed on your chest so the machine can read your heart rate. Then three sets of cloth cuffs will be placed around the legs at the calves, thighs, and buttocks. As previously mentioned, the

machine will inflate and deflate the cuffs every time your heart beats. Because the machine squeezes based off your heart rate it will pump slower when your heart beats slower and will pump faster when your heart beats faster. The treatment is described as feeling like a vigorous massage.

After treatment: After the procedure your legs may feel tired because your muscles will be getting a workout. You may also feel slightly fatigued during the first week of treatments until your body adjusts to the therapy. Patients are capable of driving themselves after treatments. There are also options available if you cannot drive, such as Dial-a-Ride, Saint, etc. Every patient is different, so results will vary. Most patients feel better about halfway through the seven-week period. Some feel a difference after one week and some require more than seven weeks of treatment. Many patients will experience:

- A need for less medication
- Fewer angina attacks
- Increased physical ability, such as walking, golfing, yard work, etc.

In conjunction with exercise, improvements from ECP can last anywhere from 1-3 years after completion of treatments. Patients can receive another set of 35 treatments in accordance with insurance.

Risks: Rarely, a patient's skin may become irritated from the cuff system; however, ECP is generally safe for qualifying patients.

Your physician should be made aware of your medical conditions, as ECP is not always an appropriate treatment for patients with severe peripheral vascular disease, deep vein thrombosis, aortic regurgitation, left ventricular hypertrophy, pacemakers, left or right bundle block, uncontrolled arrhythmias, or significant pulmonary or aortic valve disease.

Location:

Medical Center of the Rockies
2500 Rocky Mountain Avenue, Suite 100
Loveland, CO 80538
(970) 624-1800, (800) 459-4241



For more information call (970) 221-1000, (800) 459-4241, or visit www.heartcenteroftherockies.com