Athletes when undergoing EECP therapy sessions will experience massive, passive cardiovascular workout while the heart is at rest. EECP increases circulation and decreases workload to the heart resulting in increased energy levels. Studies proved EECP therapy provides as much as six times the amount of exercise benefit per hour of treatment than any other form of tolerated physical exercise.

**Sport EECP Protocol (SEP)**

SEP- EECP Enhanced External Counterpulsation is a unique therapy that boosts oxygen through the blood, enhancing athletic performance by contributing to a lower lactic acid build up through increased nitric oxide; the effect being similar to an endurance training session. EECP therapy is FDA approved. An EECP machine has been and can be an integral part of an athlete's workout room, alongside the hyperbaric chamber. Cuffs are strapped to the legs, and heart sensors are attached to a monitor that follows the heartbeat. With every beat, pressure is applied to the legs, moving the blood to the heart, and increasing the blood flow. Its pressure contributes to the expansion of arteries, and increases oxygen-rich blood flow to the heart. This improves exercise tolerance, yet creating another way of energizing the system.

- Improves overall cardiovascular fitness
- Increases energy levels massively
- Reduces fatigue and reduces lactic acid
- Naturally enhance endurance and stamina from the rigors of training
- Decrease in recovery time between workouts
- Helps reduce risk of injury in athletes
- Cost-Effective
- Design based on technology widely used in hospital
EECP Improves Exercise Tolerance

Improved exercise tolerance following enhanced external counterpulsation

World class athletes are just some of the many who have used EECP therapy to radically improve their athletic and cardiovascular ability. These Professional and Olympic athletes benefit from EECP during training with much faster recovery times from fatigue and injury. Their capacity for greater workloads is improved significantly when undergoing our Sport EECP Protocol (SEP). The effect of treatment with enhanced external counterpulsation (EECP) on exercise hemodynamics and myocardial stress perfusion in 27 patients with chronic stable angina was studied. A majority (22/27 or 81%) of patients improved their exercise tolerance after EECP treatment, and a similar percentage (21/27 or 78%) of patients improved their radionuclide stress perfusion images. Post-EECP maximal exercise heart rate and blood pressure, while demonstrating a linear relation with exercise duration, did not increase significantly despite the increased exercise duration. This suggests that the increase in exercise duration after treatment with EECP is due to both improved myocardial perfusion and altered exercise hemodynamics. EECP therapy thus appears to exert a "training" effect, decreasing peripheral vascular resistance and the heart rate response to exercise. Coronary disease patients may improve their exercise tolerance after EECP because of both improved myocardial perfusion and a decrease in cardiac work load.

SEP-EECP Therapy Expectations

Improve Performance, endurance, stamina, achieve results, swift recovery ...

Athletes Continuous Health Safety monitoring (ACHS)…
SEP-EECP Therapy

The Therapy

ECP Therapy acts as an external “cardiac assist device” helping the heart perform more efficiently with little effort or stress during session. This process deliver oxygen-rich blood to all vital organs inside the body including the heart. This process overtime improves the mechanical operation of the heart delivering more cardiac output (stronger heart) with less effort resulting in a more efficient vascular system.

EECP Therapy is Equivalent to Intense EXERCISE

Implementing EECFP Therapy in the exercise routine for Athletes can experience as much as 6 times the amount of peripheral exercise benefit from just ONE hour session than any level of tolerated physical exercise. The mechanical action of EECFP Therapy acts as a cardiac assist device forcing oxygenated blood to all organs of the body including ischemic territories (areas of blockages). In other words, EECFP can restore the delivery of oxygenated blood flow throughout the vascular system as much as 6 times faster than any tolerated physical exercise. External Counterpulsation Therapy acts as a bridge to improving aerobic exercise tolerance and wellness without any of the risk to the heart or body.

EECP Therapy overview

EECP boosts athletic performance by providing circulatory effects throughout the body, reducing lactic acid build up and decreasing inflammation. These effects accelerate the athlete’s recovery in reducing exercise-induced muscle damage (EIMD) by addressing the acute phase of inflammation that occurs after physical training.

There are numerous other benefits to EECFP. Increased blood flow occurs in the brain, heart, kidneys and all other organs providing a “jump start” to the body’s vital systems.

During an EECFP session, the athlete lies on a comfortable bed and has blood pressure-type cuffs wrapped around his or her calves, thighs and hips. Cardiac monitoring wires are attached to the athlete’s chest to record the heartbeat, and then the EECFP pumping console inflates and deflates the leg cuffs in time with the heartbeat. Athletes can listen to music, read or even sleep during EECFP therapy.

The Protocol

Much like any exercise program, EECFP Therapy recommended protocol of one hour each day for a period of 35 days. Once the Athlete has completed the course should attain maximum benefit and improved blood circulation which enables them to have substantial higher levels of endurance and fitness. Athletes can elect to receive EECFP as needed & only after intensive training. However, most athletes receive 1-3 one hour sessions per week during the training season. For those seeking a more intense approach, as many as 2 one hour sessions per day, 5 days a week may be administered.

EECP as a Regenerative Therapy

EECP is an excellent adjunct therapy in sports medicine. EECFP prompts the release of nitric oxide, which dilates the arteries, increases circulation, and triggers angiogenesis, the formation of new blood vessels. Furthermore, each EECFP treatment is like an endurance workout and provides many of the same benefits as intensive exercise.

Most of the research on EECFP which included coronary artery disease and heart failure, EECFP has been shown to successfully relieve angina, reduce nitroglycerin requirements, strengthen the heart muscle, and increase exercise tolerance. In fact, it’s often referred to as a “natural bypass.” But as you can see, it’s a versatile therapy that can benefit a wide variety of Athletes including those with sports injuries.
SEP-EECP Therapy

How it works

EECP® therapy is typically provided in 35, one-hour sessions over a period of approximately seven weeks. Additional hours may safely and effectively be prescribed to this regimen if physician evaluation of the Athlete response to therapy determines additional hours will result in greater benefit.

In certain circumstances, adjusting the Athlete’s session regimen to two hours per day can make it more comfortable for the Athletes to complete a course of EECP Therapy.

To receive EECP® Therapy, the Athlete lies on a treatment table. Compressive cuffs (similar to large blood pressure cuffs) are securely wrapped around the patient's calves, thighs and buttocks. These cuffs inflate in a distal to proximal sequence in early diastole, and deflate simultaneously in late diastole just prior to the onset of systole. Inflation and deflation are specifically timed to the Athlete’s ECG to optimize therapeutic benefit.

The sequential cuff inflation creates a retrograde pressure wave that augments diastolic pressure, increasing coronary perfusion pressure and venous return to the right heart (increasing preload and cardiac output). Rapid, simultaneous cuff deflation decreases systemic vascular resistance, afterload, and cardiac workload.
EECP Therapy Mechanisms of Action

There is evidence demonstrating improved endothelial function via the hemodynamic effects by the increased shear stress acting on the arterial wall, reducing arterial stiffness and providing protective effects against inflammation, inhibiting intimal hyperplasia and the atherosclerotic process.
There is also evidence that EECP® Therapy triggers a neurohormonal response that induces the production of growth and vasodilatation factors, which together with the increased pressure gradient created across the occlusive site during EECP® Therapy, promotes recruitment of new arteries, while dilating and normalizing the function of existing blood vessels. The collaterals bypass stenoses and increase blood flow to ischemic areas of the heart, leading to improved clinical outcomes.

**Vasomedical Model Lumenair EECP System**

The Vasomedical model Lumenair is the newest model EECP® device introduced by Vasomedical Inc. The Lumenair is revolutionary to Vasomedical EECP Therapy customers because of its unique smaller footprint. This unit is has condensed the traditional two-component system to one simple component reducing space considerably. Other improvements include the report, new inflation/deflation system (Trinity) and treatment platform (bed) fixed in a curved shape.

The all-in-one Lumenair™ EECP® Therapy System is the state-of-the-art enhanced external counterpulsation system from Vasomedical, the world leader in external counterpulsation technology.

Backed by years of clinical research and numerous published data, the Lumenair™ system incorporates the proven performance of EECP® technology in a sleek, self-contained unit that is easy to use and fosters patient confidence, comfort and compliance.
ADVANCED TECHNOLOGY

- Unique, proprietary timing algorithm based upon years of clinical data and expertise.
- Patented pneumatic system delivers optimal therapeutic pressure consistently, safely and comfortably.
- Close-loop pressure stabilization system monitors air pressure beat by beat and ensures consistent effective treatment pressure over a wide range of heart rates.
- AutoChart software automatically captures patient treatment data during EECP® therapy. A summary of timed snapshots, which include ECG and plethesmograph waveforms taken at varying intervals, can be printed or stored electronically.

CONVENIENCE AND EASE OF USE

- Colour touch screen display provides a simple, convenient and efficient way to monitor the patient while controlling system operation. All information and treatment controls displayed on one screen.
- Integrated work station and display, which can be mounted on either side of the table.
- ComfortCurve™ treatment table top with quality foam mattress and pillow provide better patient positioning for comfort and compliance.
- Small footprint allows system to fit in most treatment rooms.
- Twilock™, a proprietary cuff quick connect/ disconnect system enables easy change of cuffs between patients.

Vasomedical Lumenair EECP System Specification

**ECG Amplifier**

Input impedance: >2 MΩ - Common mode - rejection ratio: >90 dB - Bandwidth: 1-20 Hz on display

**SpO2 Oxygen Saturation**

Oxygen saturation range: 0 to 100% - Accuracy Sp02 (± 1 Standard Deviation) - 70–100% ± 2 digits for adults using the Finger Clip

Sensor 70–100% ± 3 digits for adults using Flex or Reflectance – Sensors 70–100% ± 4 digits using Ear Clip Sensor - Below 70% is not specified for all sensors

**Triggering Method**

External trigger: R-wave of patient ECG - External trigger ratio: 1:1 or 1:2 - ECG trigger range: 35-125 ±1 bpm

**Filter Technique**

Low-pass digital filter eliminates 50/60 Hz and high frequency interference.

**Treatment Pressure Range**

Adjustable from 80-300 mmHg

**Cuffs**

Each set includes calf, lower thigh and upper thigh/buttock cuffs.
**Table Safe Working Load**

400 lb (180 kg)

**Treatment Session Timer**

Set treatment time up to 60 minutes maximum. System automatically stops when set time expires

**System Protection**

Three circuit breakers — Mains and compressor, and a built-in circuit breaker in the power switch on the front panel

**User Protection / Safety**

- Automatic inflation stop and pressure release on early extra systole.
- Automatic treatment stop and pressure release if power outage occurs.
- Automatic high-pressure limit.
- Automatic treatment stop if heart rate goes out of range (35-125 bpm).
- Emergency stop hand-held button (actuated by the user).
- Alarm with auditory signal on stop events (except a power outage).

**Equipment Dimensions and Weight**

Height: 42” (107 cm) - Width: 34” (87 cm) - Length: 78.5” (200 cm) - Weight: 550 lb (250 kg)

**Operating Voltage Requirements**

230VAC, 50/60 Hz, 15A

**Operating Environment**

Temperature: 50 to 104° F (10 to 40° C) - Relative Humidity: 30 to 75% (no condensation) Atmospheric Pressure: 700 to 1060 hPa - Atmosphere: Free of corrosive gas

**Transport and Storage Environment**

Temperature: 14 to 140° F (-10 to 60° C) - Relative Humidity: 30 to 85% (no condensation) - Atmospheric Pressure: 500 to 1060 hPa - Atmosphere: Free of corrosive gas

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