

AIRCAST[®]

VenaFlow[®] Elite



Making DVT Prevention A Priority

AIRCAST®

For more than 30 years, medical professionals worldwide have depended on Aircast® for technological breakthroughs in patient care. Rooted in sound scientific methods, each Aircast product is developed using the concept of “functional management.” We have set a new standard of care for sprains and other injuries with our patented technology and use of graduated pneumatic compression.

Aircast is a brand of DJO Global. DJO is a leading global developer, manufacturer and distributor of high-quality medical devices that provide solutions for musculoskeletal health, vascular health and pain management. The company’s brands address the continuum of patient care from injury prevention to rehabilitation after surgery, injury or degenerative disease.



Deep Vein Thrombosis (DVT) and Pulmonary Embolism

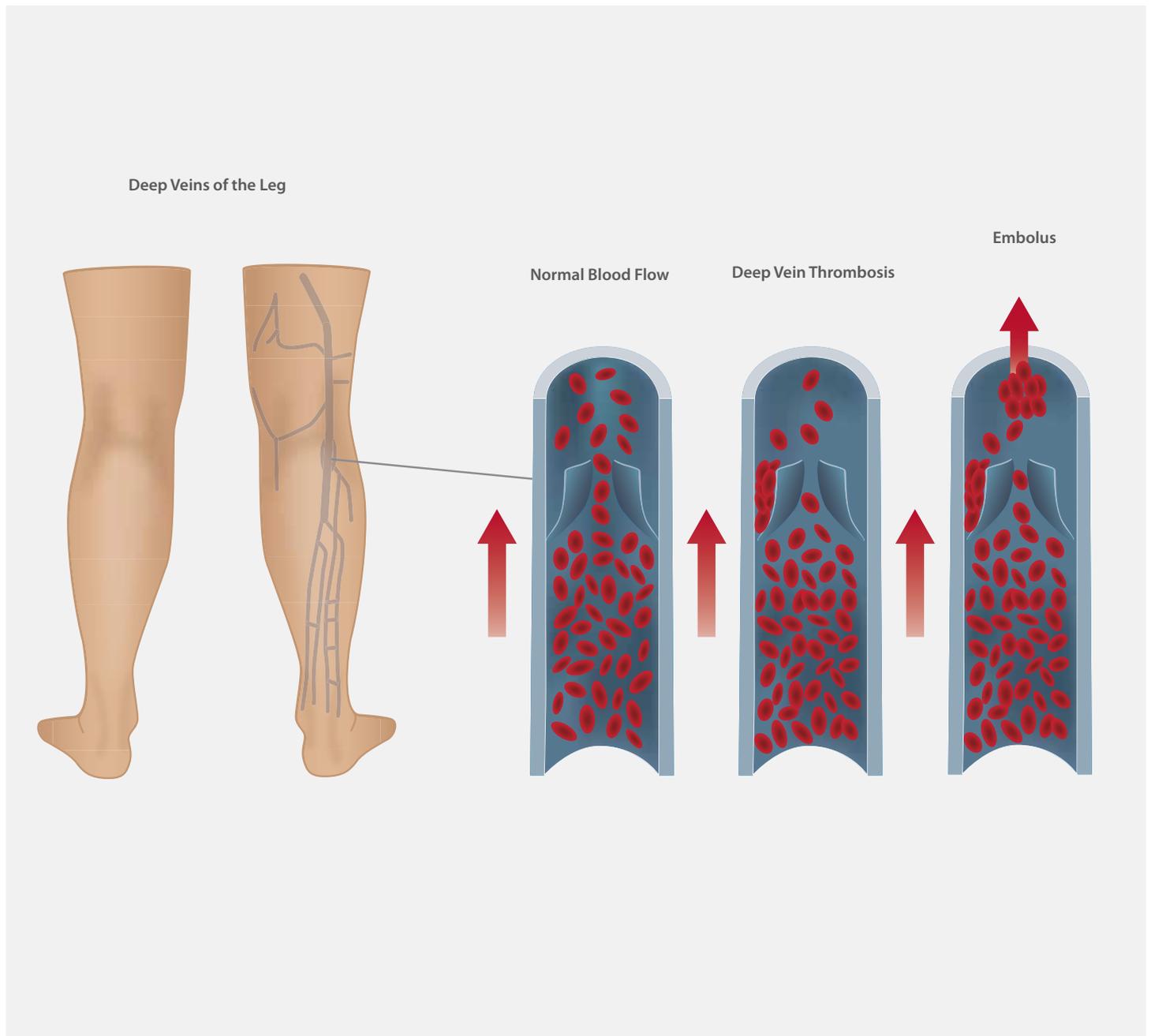
Hundreds of thousands of deaths occur annually as a result of blood clot diseases, such as Deep Vein Thrombosis or Pulmonary Embolism (close to 200,000 in the United States alone). Considered to be one of the primary causes of unexpected hospital deaths (according to Samuel Z. Goldhaber of Harvard Medical School), this incredibly high and dangerous incidence of DVT incurs significantly high costs for the healthcare facilities who have to deal with the complications or fatalities associated with this condition.

There are few DVT prevention modalities available: anti-coagulant drugs or intermittent pneumatic compression devices (IPC) are the most common solutions. Clinical research shows that the most effective DVT prevention is the multimodal approach, combining both of the above methods.¹⁰

In recent years, there has been an increased awareness and focus on the importance of DVT prevention. Not only to try and reduce the occurrences of clot diseases, but also to counter the financial impact of DVT related conditions on healthcare facilities. The high incidence of hospital acquired DVT (especially prominent in patients who have undergone surgical procedures) incurs unexpected costs such as un-scheduled hospital bed occupancy, re-admissions costs, etc.⁷

In this context, more and more protocols are recommending a multimodal DVT prevention approach for surgeries lasting 30-60 minutes or more, national health services are establishing DVT prevention guidelines, hospitals are setting up committees dedicated to DVT prevention.¹¹

The prevention of DVT is fast becoming a priority in the healthcare sphere, and the new Aircast VenaFlow Elite is the perfect device to achieve that aim.



VenaFlow Elite - Walk Away From Risk

As part of its commitment to providing global healthcare solutions, preventing Deep Vein Thrombosis (DVT), is one of DJO's priorities.

In this context, DJO is launching the New Aircast VenaFlow Elite System.

Based on the clinically proven VenaFlow platform technology, the new VenaFlow Elite unit is a state-of-the-art device, now encased in an up-to-date, low profile and light-weight design.^{1,7}



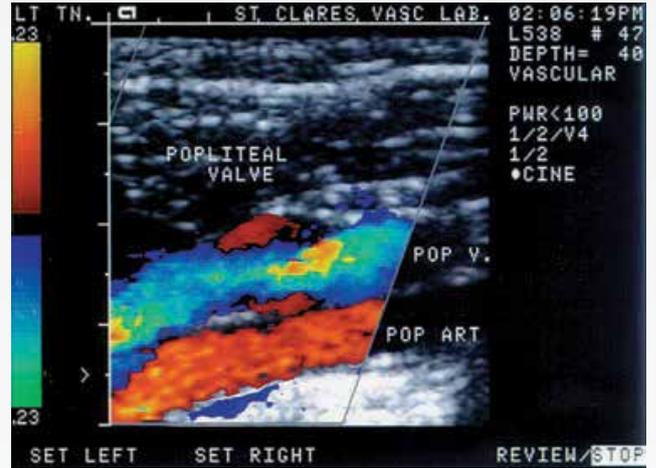
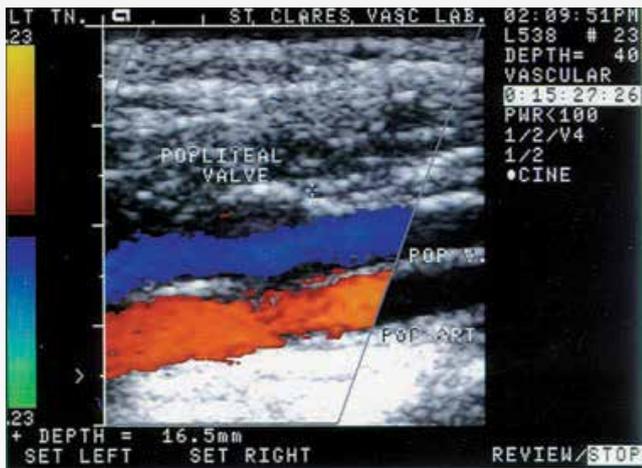
How does VenaFlow Elite prevent DVT?

Blood clots often form behind venous valves.

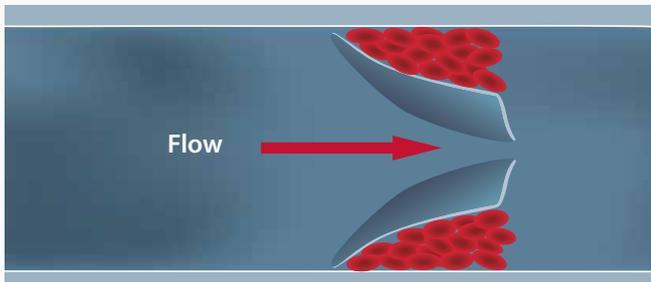
An intermittent pneumatic inflation device such as VenaFlow Elite, which combines normal inflation and graduated sequential compression accelerates venous velocity, which in turn creates turbulence to prevent clot formation.

Colour scale:

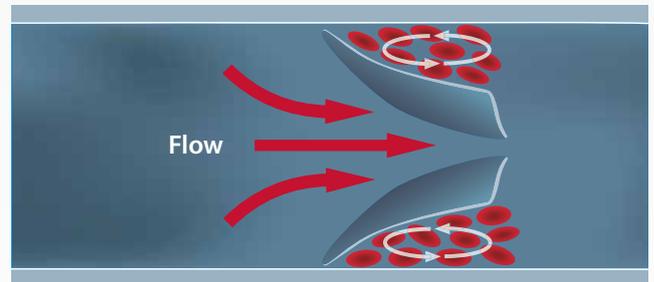
Black – No flow; **Blue/Green** – toward the heart; **Red/Yellow** – away from the heart⁴



Clots can form behind valve cusps



Turbulence reduces clot formation



VenaFlow Elite Mimics Ambulation

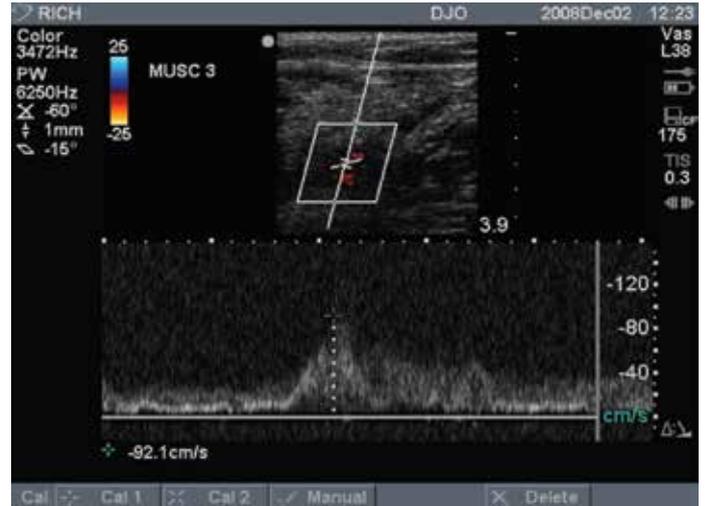
The VenaFlow platform technology provides proven performance, simulating peak venous velocities produced through ambulation. The Dopplers below exhibit the blood velocity achieved under the following conditions: ambulation, with VenaFlow Elite and with two competitive slow inflation devices.²

Dopplers measured at Femoral vein.



Plantar/dorsiflexion

111% increase in venous velocity



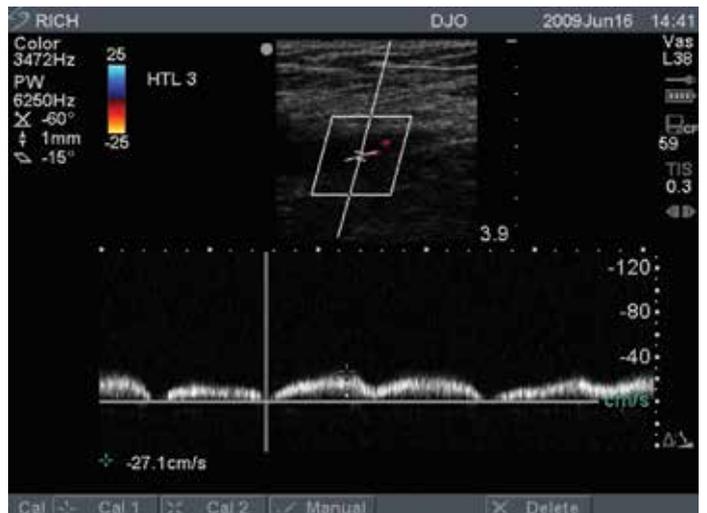
VenaFlow Elite

112% increase in venous velocity



Slow inflation device

50% increase in venous velocity



Slow inflation, uniform compression device

33% increase in venous velocity

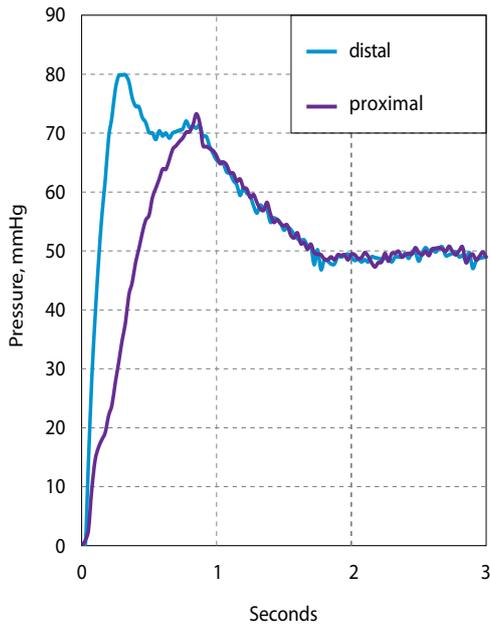
3 STEPS TO WALK AWAY FROM RISK

“VenaFlow Elite is the only DVT compression device that combines normal inflation and graduated, sequential compression.

This unique technology combination makes it the only device proven to mimic physiologic blood flows achieved through ambulation.”¹

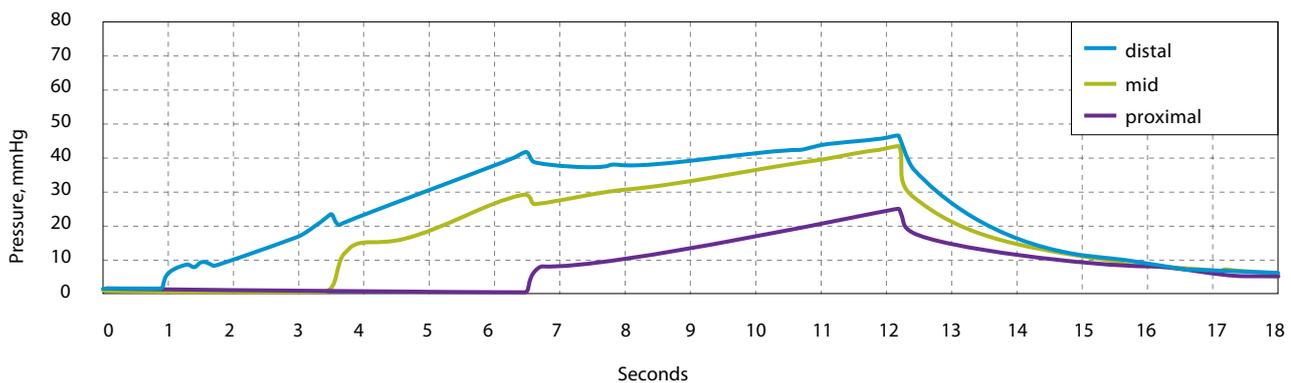
1 Normal Inflation vs Slow Inflation

VenaFlow Elite pressure curve



The VenaFlow Elite System inflates in less than a ½ second, thus providing the shear stress needed to advance fibrinolysis and prevent clots from forming behind the valve cusps. Slow inflation devices reach settle pressures in approximately 4 to 12 seconds depending on the device².

Slow inflation device pressure curve



Normal inflation is proven to be more efficient than slow inflation:

- “Intermittent pneumatic compression with a faster inflation rate dramatically increases blood flow, generates greater shear stress on the vascular wall, stimulates greater nitric oxide release, and consequently results in stronger responses of vasodilatation when compared with intermittent pneumatic compression with a slower inflation rate.” (Kang Liu et al)²
- “[Slow inflation devices] do not mimic normal physiologic venous pump action. They may be ineffective in preventing the more dangerous proximal deep venous thrombosis.” (Gardner and Fox)³
- Roberts et al established that “devices with a greater rate of inflation produced improved flow augmentation as compared with those with a slower rate of inflation... [VenaFlow] produced the greatest increase in peak venous velocity compared with all the other devices.” (Westrich, 1998)⁴

2 Graduated Sequential Compression

The VenaFlow Elite provides graduated sequential compression via the new Integrated Graduated Sequential Flow (IGSF) system, which increases venous velocity by inflating the distal aircell first, and then the proximal second, thus mimicking the blood circuit during ambulation.

The IGSF is comprised of a single tube that connects to the Duplex™ aircells in the cuff (2 overlapping & seamless aircells). When in use, the distal aircell inflates first within a ½ second, then, during the distal pressure inflation, the air flows into the proximal aircell. After 6 seconds, the cuff deflates.

Sequential compression devices are proven to be more effective than non-sequential devices

Research shows that graduated, sequential compression devices are more effective than a non-sequential device in clearing blood from the soleal, tibial and femoral veins and therefore is more effective at preventing deep venous thrombosis proximal to the calf. (Nicolaides)⁵

- *“The use of elliptical, sequential and rapid-filling compression of the leg with overlapping aircells produces significant hemodynamic changes in the common femoral vein, which are superior to other sequential slow or rapid filling IPC devices.” (Labropoulos)⁶*

VenaFlow Elite emulates blood flow during ambulation

The sequence of blood flow during ambulation begins by emptying the distal calf first, then the foot and finally the proximal calf. This is the mechanism of VenaFlow’s graduated, sequential compression which squeezes the distal portion of the calf, then the proximal for a simulation of ambulation.³



Fig. A, B & C: Sequence of venous pump action during ambulation. Note that the physiological sequence is distal calf pump, foot pump then proximal calf pump.

3 Asymmetric Compression

VenaFlow Elite’s cuffs, featuring Aircast’s exclusive Duplex aircell system (2 overlapping and seamless aircells) apply focused compression to the deep veins and sinuses, maximizing peak blood velocity and total flow.

The cuffs’ design, with the distal aircell overlapping the proximal one, generates the increased venous velocity by applying a higher pressure to the distal portion of the calf. Circumferential compression is not as efficient in achieving superior venous velocity, as it addresses the superficial veins and requires more pressure to reach the deeper veins.

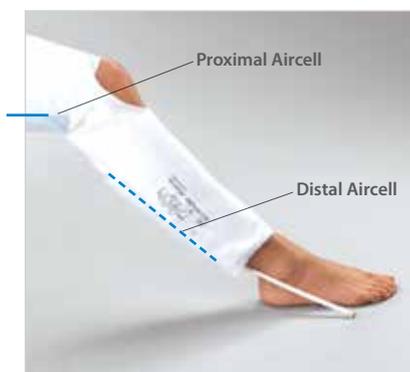
Asymmetric compression is proven to be superior to circumferential compression in emptying veins

The VenaFlow Elite’s duplex aircells apply focused compression to the anterior and posterior portion of the calf to effectively empty the veins and augment peak venous velocity.⁴

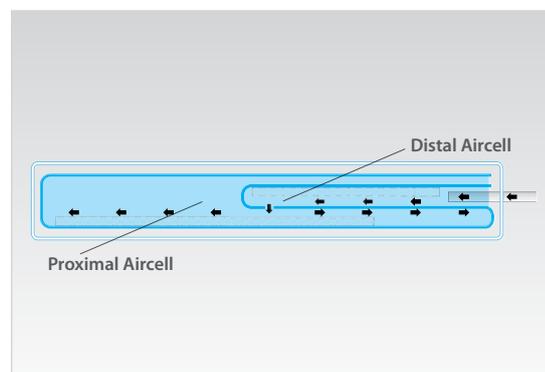
- *Research shows that the distal aircell accounts for most of the velocity of venous return, and the proximal aircell “supplements and extends the action of” the distal aircell. (Labropoulos)⁶*



Overlapping distal aircell increases venous velocity



Distal aircell inflates first, proximal aircell follows



VenaFlow Elite Cuffs Airflow Sequence

The VenaFlow Elite's new state-of-the-art design elegantly displays its unique, user friendly features



Features	Benefits
Low profile, light-weight design	Easily stored, easily transported
Compliance monitor/alarm	Available with compliance counter plus alarm notification for non-compliance
Telescoping bed hanger	Extends to accommodate up to 9 cm (3.5")
Battery option	Battery-installed units available upon request
Automatic cuff detection	System automatically identifies attached cuff configuration and adjusts pressure accordingly
Preset pressures & alarms	No adjustments necessary
One pump for calf, thigh & foot cuffs	Provides for ease of use and minimizes inventory
Soft and breathable cuffs	Assists in increasing patient comfort and compliance

VenaFlow Elite



Thigh Cuff



Calf Cuff



Foot Cuff



Ordering Information

Part No.	Description	Qty	Max. Calf Circumference
30BI	VenaFlow Elite System	1	N/A
30BI-B	VenaFlow Elite System with Battery	1	N/A
3040	VenaFlow Elite Calf Cuff	Pair	48 cm (19")
3042	VenaFlow Elite XL Calf Cuff	Pair	56 cm (22")
3043	VenaFlow Elite Bariatric Calf Cuff	Pair	76 cm (30")
3045	VenaFlow Elite Thigh Cuff	Pair	74 cm (29")
3046	VenaFlow Elite Foot Cuff	Pair	One size fits all
3050	VenaFlow Elite Foam Calf Cuff	Pair	48 cm (19")
3008	Tube Assembly, 168 cm (5.5')	Each	N/A
3008XL	Tube Assembly, 260 cm (8.5')	Each	N/A
3008XXL	Tube Assembly, 320 cm (10.5')	Each	N/A
3008XXXL	Tube Assembly, 380 cm (12.5')	Each	N/A

System Replacement Parts

Part No.	Description	Qty
3071	Bed Hanger	1
3072	Tube Attachment Tag	1
3073	Fuse	Pair
3074	Battery Pack	Pair

Please Contact Customer Services for Replacement Power Leads

Clinical Studies attest to the efficacy of VenaFlow Elite in preventing DVT

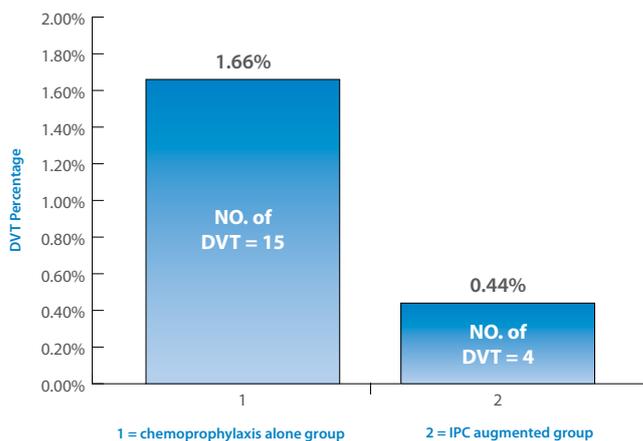
VenaFlow has been proven to reduce DVT by 50%

VenaFlow Elite's ability to mimic ambulation makes it more effective at preventing DVT. VenaFlow has been proven to reduce DVT by 50% vs. slow inflation devices on the market.⁷

- *"The overall rate of DVT diagnosed by ultrasonography was 6.9% with the [VenaFlow] device and 15% with the [SCD device]...This may be the result of decreased venous stasis, increased local fibrinolysis, inhibition of the coagulation cascade, or the enhancement of peak venous velocity as measured in the proximal deep venous system or a combination of several mechanisms."* (Lachiewicz)⁷

DVT prevention results – Single approach vs Multimodal approach

- *"Mechanical compression with VenaFlow calf compression in conjunction with chemoprophylaxis is an effective means of reducing thromboembolic disease in a high-risk population.... By using this protocol we were able to attain one of the lowest rates of thromboembolic disease (3.5% overall) following hip fracture in the existing literature."* (Westrich)⁹
- *"Venous thrombosis prophylaxis with low-molecular-weight-heparin, augmented with a rapid-inflation intermittent pneumatic compression of the calves (.4% dvt rate) was found to be significantly more effective for preventing deep vein thrombosis when compared with a treatment of LMWH alone (1.7% dvt rate)."* (Eisele)⁸



Eisele - Bar graph illustrating the prevalence of deep venous thrombosis chemoprophylaxis only Group (n = 902) and the intermittent pneumatic compression difference between the groups was significant (p = 0.007)

The VenaFlow Elite System is indicated as a prophylaxis for deep vein thrombosis (DVT).

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