

# **Post Liposuction Compression Garment Comparison:**

## **Is There a Difference?**



A clinical study by The Aesthetic Center For Plastic Surgery:  
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## **Post Liposuction Compression Garments: Is there a Difference?**

### **Executive Summary**

The majority of plastic surgeons are sure they are obtaining better results with postoperative compression garments than without. However, little has been done scientifically to show which type of compression garment provides a comfortable healing experience and optimal patient compliance. The objective of this study was to measure patient response while wearing different types of prescribed compression garments in order to determine the variance in patients' experiences and compliance. The findings revealed a significant inequality in comfort and performance between the newly developed, F5-certified ComfortWear® experimental garment (The Marena Group, Lawrenceville, GA) and industry standard control garment (Design Veronique, Richmond, CA). The results suggest a considerable increase in patient satisfaction and compliance when patients wear the F5-certified compression garment like the experimental garment.

### **Background**

The use of compression as a medical tool was first indicated by Hippocrates in 600 BCE and has been used ever since in many medical specialties. The compression used in postoperative aesthetic surgery patients is focused on the lymphatic system with a target pressure of 17 - 22 mmHg as established by Dr. Yves Gerard Illouz in his study "Complications of Liposuction". There are many ways to apply such a level of pressure including elastic tapes, elastic wraps, elastic bandaging and elastic compression garments. Today, elastic compression garments are the most popular choice by physicians worldwide. In the 1970s, a new elastic fabric called Powernet was the elastic textile breakthrough of its time, combining both elastic strength and durability. Powernet quickly became the industry standard fabric for post-operative compression garments and is still the most commonly used fabric today, despite little

change in its design or performance. However, during the 35 years since the introduction of Powernet, textile technology has improved through the development of scientifically advanced synthetic fibers and highly engineered manufacturing techniques. In studies investigating the neurophysiology of elastic fabrics, these newer fabrics have shown marked improvements in user experiences, including performance enhancements and significantly better wearability.

### **The Problem: Patient Compliance**

Patient compliance and consistency in wearing the prescribed compression garment are common issues that plastic surgeons face. Compression garments are typically prescribed to be worn twenty-four hours a day, seven days a week for the duration of the recovery time (three weeks to six months), making comfort essential. However, the control garment, using Powernet fabric, has several functional and design limitations that cause discomfort during high compression, long term use.

### **The Solution: Improve Patient Comfort**

With a complex combination of factors that create the experience of comfort, this study focuses on the most relevant comfort properties for long-term wear of high compression garments. We term the most relevant properties as clothing comfort properties. Clothing comfort properties are softness, support, stretch, cool and dry, and clean and fresh.

### **Study Design, Materials and Methods**

From 2006 to 2007, 50 patients participating in this study had suction assisted lipectomy of abdomen and thighs while 20 of these patients (40%) also had other minor liposuction on areas such as face, neck, back, knees and arms. Patients underwent procedures in a fully accredited outpatient facility in Houston, Texas and ranged in age from 17-39 years and weighed 138-170lbs. Patients received

two compression garments: one garment made out of industry standard Powernet elastic fabric (the "control garment"), and the other garment made with a newly developed elastic fabric technology called ComfortWeave(the "F5-certified experimental garment"). The evaluated compression garments were girdles that covered from below the breasts to mid calf. Patients changed garments every 24 hours for a period of 30 days, receiving consultations two, four, and six weeks following their procedure. During the final consultation, the participant completed a written 35-question survey. As an incentive to complete all requirements of the study, participants received a gift certificate to "The Added Touch," a day spa within the surgery center.

Study candidates met the following criteria:

Female  
Garment size: Large  
Weight : 135 to 170 lbs.  
Chest: 32"-36"  
Waist: 30" - 33"  
Hip: 40" - 43"  
Thighs: 12"-13"

### **Findings**

94% of the completed surveys were 100% consistent across all questions, validating the responses as being very accurate. The three most important factors selected by the patients in distinguishing one garment from another were (in order of importance) comfort, support and softness. 82% of study participants preferred the F5-certified experimental garment over the control garment. Participants reported the F5 experimental garment to be softer and more conforming to their body shape, creating a more comfortable, better fitting garment. The control garment stood out as being itchy and harsh against the skin, producing more irritation. Participants also rated the F5-certified experimental garment as good or better on all measures of stretch, compression, aesthetics, softness, comfort and healing. Respondents reported that they would prefer to wear the F5-

certified experimental garment instead of the industry standard control garment.

### **Understanding the Results:**

#### **Fabric Content & Structure**

Fabric is the most important element of a compression garment. It must simultaneously provide elasticity, softness, ease of movement and comfort, while at the same time imparting sufficient pressure to compress the body to the desired level. While both the control and the F5-certified experimental garment use a knitted fabric, the fiber quality used to make each fabric and their knitted mechanical structures are very different.

#### **Content**

Both garments are made from a combination of "hard", relatively non-elastic (nylon) fibers and "soft", highly elastic (spandex, also called elastene) fibers. The proportion of the combination of hard and soft fibers is a critical component to the patient experience. The control garment is composed of 75% non-elastic hard yarn (nylon) with 25% elastic yarn (spandex) laid in. The F5-certified experimental garment is made from 49% elastic yarn (Soft LYCRA® spandex) with 51% non-elastic hard yarn (TACTEL® nylon) laid in. The F5-certified experimental garment has 50% more "soft" elastic fibers giving it almost double the power and stretch with an improved feel of the fabric on the skin.

#### **Fiber Differences**

There is more to a fabric's performance than simply the content proportion of the fibers; the type of fibers used is key. It should be noted that Soft LYCRA® and TACTEL® nylon are advanced versions of standard spandex and nylon fibers used in the control garment. Developed through advanced chemical engineering, both of these advanced fibers have physical properties that contribute to a better performing finished fabric.

Invista TACTEL® Nylon: The inherent strength of TACTEL® enables the production of fabrics that

are three times as tough (resilient, long lasting) as those based on other fibers. According to flexural rigidity testing, TACTEL® is at least twice as soft as most other nylon fibers. Fabrics made with TACTEL® are at least 20% lighter than most other fabrics with the same construction and yarn amount. TACTEL® nylon is naturally non-allergenic and resists bacterial growth.

Fabric Content

	Experimental	Control
Nylon	51%	75%
Spandex	49%	25%

Yarn Brands

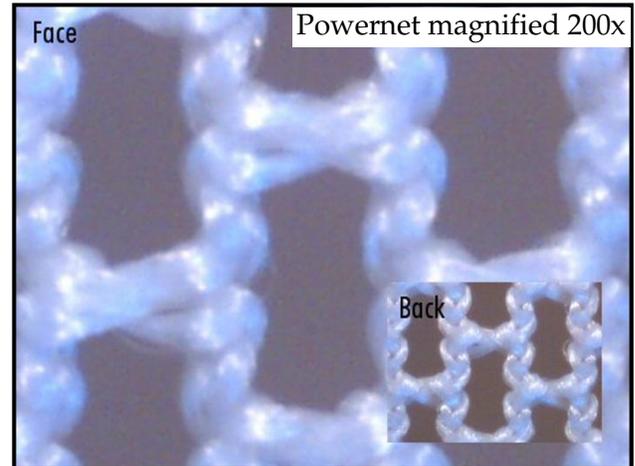
	Experimental	Control
Nylon	TACTEL®	Standard
Spandex	Soft LYCRA®	Standard

For more information on TACTEL® Nylon visit: [www.tactel.com](http://www.tactel.com). For more information on Soft LYCRA® visit: [www.lycra.com](http://www.lycra.com)

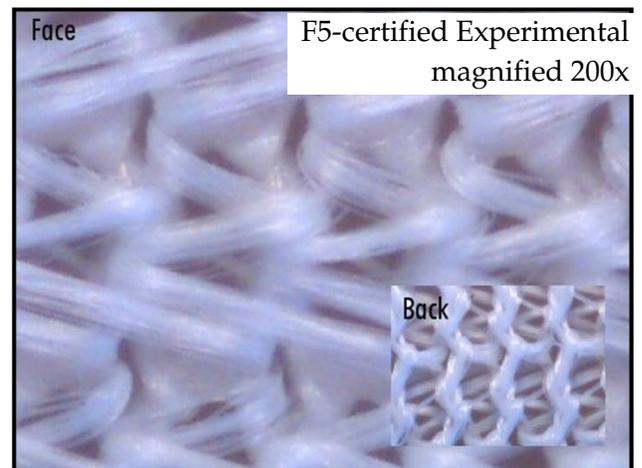
Invista Soft LYCRA® Elastene (spandex): Soft LYCRA® has very high elongation coupled with a unique, flat stress-strain curve that gives the fiber more control, comfort and freedom of movement. After repeated movements, other elastic fabrics loose power. Soft LYCRA® has a unique fiber structure, allows it to retain more strength than any other spandex on the market, movement after movement.

Soft LYCRA® gives new freedom of motion to make daily activity during the healing process more comfortable. By reducing perceived pressure (but not actual pressure) on the body by 40%, Soft LYCRA® promotes patient comfort. Due to Soft LYCRA® yarn properties, the F5 experimental garment offers a better, more consistent fit across a greater size range and provides a soft stretch with power, a unique combination not normally found in standard stretch fabrics such as Powernet (as used in the control garment).

**Fabric Structure**



The control garment utilizes a Powernet construction (shown above) developed several decades ago. Such fabrics have the non-elastic nylon yarns (visible on face or back) tightly wrapped around elastic spandex yarns (not visible). This structure is directly tied to the patient perception that the control garment was itchy and harsh against the skin.



The newly developed F5-certified experimental garment utilized in the study has a very unique, patent-pending knit structure. Elastic Soft LYCRA® yarns (visible on face view) are fused together to form a floating spandex grid. Then, the TACTEL® Nylon fibers (visible on back view) are loosely laid in to provide protection and strength. The experimental structure design increases the contact of the Soft LYCRA® yarns with the skin resulting in study participants

reporting the F5-certified experimental garment felt softer.

The differences in fabric structures greatly affect the comfort of the fabric against the skin. The face of the F5 experimental fabric is noticeably more compact. This creates a smooth fabric surface as opposed to the control fabric's more open structure that allows the skin to push through the openings.

### **What is "F5" in the F5-certified experimental garment?**

The new F5 fabric technology addresses five key performance factors which directly affect the patient experience. Independent laboratory results demonstrate that F5 fabric technology has improved upon standard compression textiles such as Powernet fabrics. The F5 factors are:

1. Power/Stretch – To achieve optimal performance and comfort, the fabric should stretch North and South, as well as East and West. This mimics human skin by giving with the body's natural movements without causing any sensation of restriction. Even compression must also be simultaneously provided to adequately support the body in all directions. Combining high elasticity while providing the doctor recommended\* compression is unique to F5-certified fabrics. It lowers perceived garment compression while maintaining actual garment compression on the body.

2. Softness – A smooth, soft, comfortable garment is crucial to achieve maximum compliance. Fibers, design and manufacturing techniques all contribute to the silky softness of an F5-certified fabric.

3. Durability – Fabrics should maintain shape and size throughout the recovery process, including long-term wear and repeated, daily washings. This is achieved through interlocking knitting designs and the use of premium yarns. F5-certified garments will retain their original qualities through to full recovery. Most other types of compression garments lose their shape

and require replacement or adjustments during the recovery period.

4. Moisture Management – The fabric should aid the skin in its normal cooling and drying process by absorbing, wicking and evaporating body moisture. Keeping the skin continuously cool and dry decreases the sensation of discomfort and lowers the risks of irritation and rashes.

5. Anti-Microbial – The human body – especially that of a recovering surgical patient – provides the ideal environment for odor, mold and mildew-causing microorganisms to grow. An antimicrobial fabric is protected against the growth of bacterial, microbial and fungal colonies. This prevents unwanted foul smells and colored staining that these microbes create. A F5 certified garment will remain clean and fresh throughout the entire use of the garment.

\*F5-certified garments provide 17-20mmHg as established by doctor Yves-Gerard Illouz's clinical evaluation of pressure therapy in conjunction with aesthetic and reconstructive surgery (Body Sculpting by Lipoplasty, Yves-Gerard Illouz, 1989)

### **Conclusion**

The study findings revealed a significant difference in comfort and performance between the newly developed F5-certified ComfortWear® experimental garment (The Marena Group, Lawrenceville, GA) and industry standard control garment (Design Veronique, Richmond, CA). The results obtained from this study (Post Liposuction Compression Garment Comparison: Is there a difference?) suggest a considerable increase in patient satisfaction and compliance when given the choice to select a F5-certified compression garment. Highest patient compliance occurs when the three patient-identified factors (comfort, support and softness) are simultaneously achieved. To ensure your compression garment(s) will provide the maximum patient compliance, F5-certified compression garments should be prescribed.

For more information on this study, please  
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