Under Pressure

The Science and Psychology Behind Compression and Support Wear

By Casey Flynn

Snug and stylish performance wear is seeping into the mainstream. Every year there are more people running, riding, and competing in calf tights, arm sleeves, and tight-fitting tops. Does it actually do anything or is it just a fashion statement?

Enter the fast-growing, performance improvement-promising, scientifically hazy world of compression and support wear. From 2010 to 2011, sales jumped 189% as athletes spent $38 million on compression sportswear, according to Leisure Trends Group Sporting Goods RetailTRAK. The ever-expanding merchandise umbrella includes everything from a tight-fitting wicking layer (Under Armour), to gradient/graduated compression, which applies different levels of pressure to different parts of the body (SKINS, CEP, 2XU), to a support web of material that promises improved biomechanics in motion (CW-X and Salomon).

The origin of this diverse genre of sportswear lies in the long-time practice of using compression stockings in medicine to treat circulatory problems in the legs. Pressure applied to veins helps expedite blood transport to the heart. The augmented "venous return" is a strong selling point of athletic compression gear: better circulation helps oxygenate tissue and remove lactic acid and other waste products.

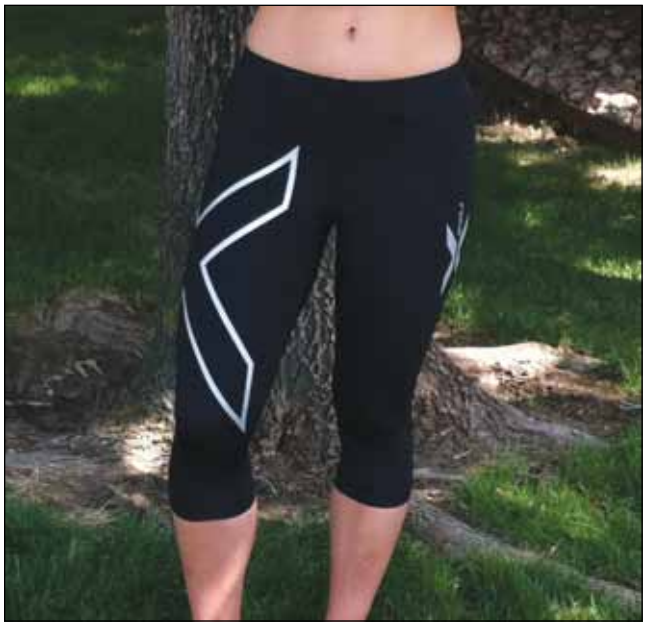
Additionally touted benefits include reduced injury and soreness from less muscle oscillation and improved agility and body awareness.

Many companies are expanding on the original concept. CW-X integrates kinesiology taping technologies (another dubiously beneficial practice) into an "exoskeletal support web" to provide additional muscle and joint stabilization and structural alignment. SeasonFive blends wetsuit and rashguard components to create a flexible yet supportive waterproof compression layer.

Despite the claims of manufacturers, scientific research into the physiological effects of compression clothing remains uncertain. A 2011 literature review published in the journal *Sports Medicine* examined 87 studies on the effects of compression wear and concluded that "wearing these garments has limited physiological or performance effects, although reports of detrimental effects are rare." The review goes on to mention that there is some proof of physiological benefit, but "the findings are often isolated or inconclusive."

"In many instances, people tend to rate muscle soreness as being milder when compression garments are worn during recovery," says Braid MacRae, lead author of the review and researcher in Clothing and Textile Science at the University of Otago, New Zealand. "This doesn't generally translate into a better performance during subsequent exercise."

Endurance sports coach and author Joe Friel sees part of the difficulty of drawing definitive conclusions from scientific literature as a function of the experimental methods used in the research. Studies "use broad definitions" of performance and recovery, using a host of physiological variables to test athletic benefits, Friel says. Test subjects and materials have not been



consistent either, with "everyone from medical patients to young students to athletes from both power and endurance sports" wearing a wide range of compression garments. "Taken as a whole, all of this variance muddies up the interpretation of such research," says Friel.

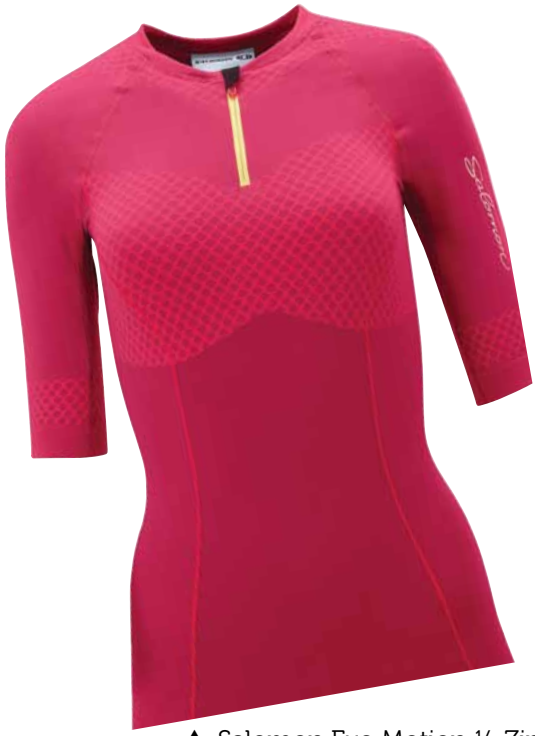
With little solid proof of physiological benefit, what's the draw? Perhaps people think it works for them, so it does. Psychological factors heavily influence athletic performance, says Sarah Castillo, PhD, a certified consultant with the Association for Applied Sports Psychology. Confidence, in particular, has a strong bearing on execution in sport. "A confident athlete will more often get their best performances on a consistent basis," says Castillo. Believing in yourself could result from trusting that the gear will make you faster or even thinking you look good in tight-fitting clothing.

The psychological benefits aren't reaped only during competition, either. During training, athletes hone technique, build power, and extend limits of endurance. "Having confidence in a training regimen is huge when it comes to making the adjustments you need to improve your performance," Castillo says. So whether you wear your compression tights on race day or not, you may still compete better.

Legions of recreational, amateur, and pro athletes attest to feeling stronger, fitter, and faster in compression gear. Desert ultramarathoner Samantha Gash credits both mind and body benefit to her successes in an extreme sport. "I started to act more like an athlete because I felt reassured that my clothing was enabling me to physically be in the best position I could be to

train hard and race even harder," Gash says. The rigors of multi-day stage races also demand quick recovery, something Gash feels is augmented by graduated compression.

Women athletes, who compete in sports from triathlon to trail running to Olympic luge, enjoy product design that lends attention to the female anatomy. Many companies focus on specific structural and support needs and utilize extensive feedback from female testers for their women's lines. Athletes report more strategic support in compression bras than traditional sports bras, better hip, knee, and ankle support, and reduced chafing as common benefits of compression gear.



▲ Salomon Exo Motion ½ Zip Tee

Whether it's in your blood or in your head, athletes may find improved performance and faster recovery with this tight-fitting technology. Endurance coach Joe Friel accurately sums up the ambiguity: "If you try a product and believe it helps in some way, then that's about as good as it can get—at least for now."

Get Informed

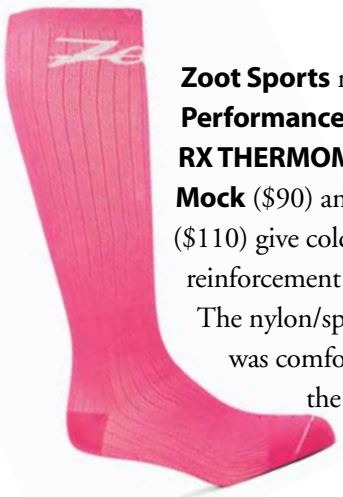
How can you navigate this nebulous market? Be an informed consumer. Take the time to review company websites and claims. Look for transparency, with links to independent studies and not just fancy-looking charts and graphs of unknown origin.

Shop in a specialty store that serves your sport. Sales people will be better trained in the different products and can help match them to your needs. They will also be able to fit you properly, which is critical with compression gear. Too loose and you won't get any benefit, too tight and you may cut off circulation.

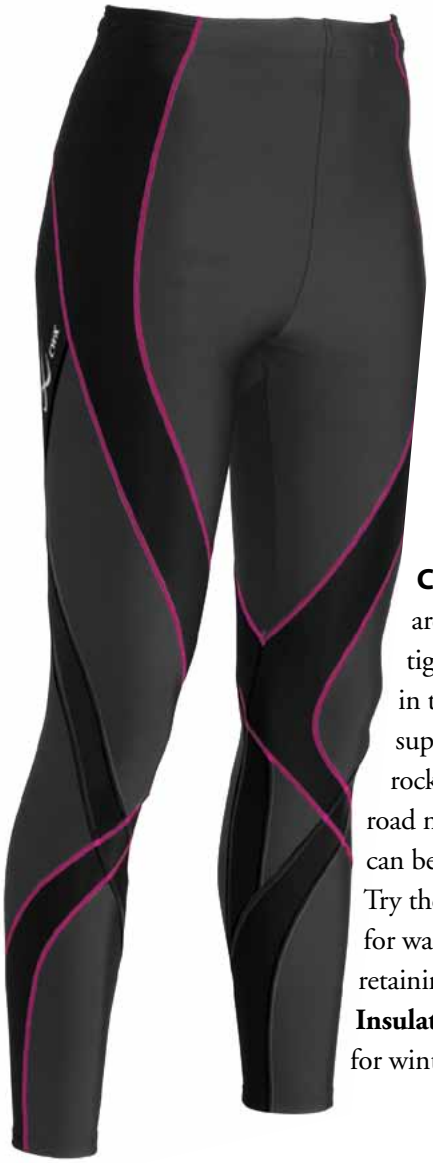
Get Equipped

SKINS unique sizing and thin but durable fabric provides a moderate level of compression and excellent temperature regulation. Combine the **A400 Shorts** ($90) and the **A400 Calf Tights with Stirrup** ($50) for comfortable, full-leg compression for riding or running. The **A400 Shortsleeve Top** ($115) supported my shoulders and aided in good running *posture. skins.net*

SeasonFive's Barrier line combines a waterproof, breathable layer with strategic compression for paddle sports. Try the **Barrier Long Sleeve top** ($90) and the **Barrier Capri** ($70) for support on the water. *seasonfive.com*



Zoot Sports new **Performance Compress RX THERMOMegaheat+ Mock** ($90) and **Tights** ($110) give cold-weather reinforcement to muscles. The nylon/spandex blend was comfortable against the skin and the articulated elbow of the mock allowed free motion without pinching or discomfort. *zootsports.com*



CW-X Pro Tights ($100) are a solid all-around tight. The added material in the Conditioning Web supports muscles during rocky trail runs and long road miles. Plus, the tights can be used for recovery, too. Try the **3/4 Pro Tights** ($85) for warmer conditions while retaining knee support, or the **Insulator Pro Tights** ($110) for winter activities. *cw-x.com*