



Tight Lines

Performance-Enhancing Apparel for the New Era

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The early days of the internal combustion engine were a time of simultaneous discovery, a time when Ford, Benz, Daimler, Mercedes, Jellinek and Trouve were taking their own independent yet parallel approaches to designing engines to power vehicles. In similar fashion, more than a dozen athletic apparel companies are taking their own approach to what is broadly known as "compression" clothing, all converging on the running apparel scene at approximately the same time.

Support hose and other tight-fitting apparel has been available for decades, especially for those suffering circulatory conditions such as varicose veins or problems associated with diabetes. But using those types of clothes for running is relatively new -- aside, of course, from the warmth and minimal support runners have gained from running tights since the 1980s.

However, new fabric and manufacturing technologies have led to a new wave of form-fitting tights, tops and socks aimed specifically at improving running performance and recovery. It's becoming one of the hottest trends in running, thanks in part to the exposure derived from Paula Radcliffe, Kara Goucher, Lornah Kiplagat, Gete Wami and other elite runners who wear the products.

While there is a limited amount of independent research conducted on the subject of these technologically advanced garments, studies have shown benefits include enhanced muscle stability, reduced muscle fatigue and soreness, and increased endurance; improved temperature regulation via moisture management and enhanced circulation; skin protection from UV rays; decreased risk of leg edema during travel; and increased removal of lactic acid. Additional manufacturer claims range from accelerated warming of muscles and lymphatic system improvements to greater muscle strength and enhanced proprioception. How these benefits counteract with the potential loss of flexibility and range of motion has not been studied, but some benefits seem clear during recovery training and after runs.

Although many companies make similar products, there are differences among them in fabric qualities, types of weaves, elasticity, durability, detailing like stitching, ribbing, welded overlays and zoned construction, antimicrobial elements, wicking performance, moisture management and anti-allergens. Pricing varies greatly, too, from \$25 for a pair of basic compression socks to \$190 for a pair of targeted muscle support tights. Here are some of the product categories that help to explain what is available at running shops.

Compression Shorts, Knickers and Tights

Check out brands like: 2XU, Craft, Pearl Izumi, Salomon, Skins, Zoot

By definition, just about any pair of tights qualifies as, at least, a mild compression garment. Different manufacturers have incorporated variations on that theme, producing compression shorts, below-the-knee-length tights, and full tights with either uniform or gradient compression, depending on the brand. Pearl Izumi uses a more uniform compression. Pearl Izumi's knickers use some of the company's bicycling clothing features, like leg grippers, to extend the hold of the compression down to the knees.

2XU uses circular, high-gauge knits with greater denier ratings (a fabric's 'Denier' rating relates to the weight of the yarn in the fabric. The higher the denier, the heavier (and tougher) the fabric.) for an even distribution of compression. 2XU and Skins also use gradient compression in their shorts and tights. Craft combines gradient compression with its proCOOL fabric to help regulate body temperature, helping to keep your core consistent. Zoot enlists a combination of technologies in its zoned compression wear, while Salomon applies "Exo" -- an ultrasound welding of an external, microporous film -- to the apparel surface to give it a web-like structure.

Tops

2XU, ASICS, Craft, Nike, Salomon, Skins, Opedix, Zoot

The performance benefits of compression shirts for runners, be they sleeveless, tees or long-sleeved, have not been thoroughly tested or discussed, but many of the concepts that apply to the lower body with respect to blood return and muscle stabilization should hold true for the upper body. Some specific benefits can be felt while running. For example, the Opedix Posture Shirt, developed in part by the Steadman Hawkins Foundation in Colorado, noticeably reinforces upright upper torso posture necessary for optimally efficient running form. ASICS' Inner Muscle shirt is designed to promote upper arm lift and stabilize the shoulder blade. If nothing else, these shirts will keep you warm and protect your skin from the sun's harmful rays.

Calf Sleeves and Compression/Recovery Socks

2XU, Craft, Nike, RecoFIT, Skins, SLS3, SUGOI, OxySox, Zensah, Zoot

It's in this arena of calf sleeves and compression socks that the benefits of compression to runners appear most clear, and, perhaps for those reasons, it's the fastest-growing segment of compression clothing. Studies have shown that compression socks can enhance venous return to the heart through a more efficient calf muscle pump, leading to increased endurance capacity. And when muscles are kept more compact, the theory goes, balance and proprioception are improved and muscle fatigue is minimized.

During a run, you can instantly feel the comfort from the lack of muscle and skin vibration (that can lead to fatigue or, worse, pain for those who suffer shin splints) and the control (that comforts those suffering plantar fasciitis or Achilles tendinitis). As for post-run recovery, studies have shown a faster lactate recovery rate for those wearing compression socks.

Targeted Support

ASICS, CW-X, Opedix

The most unique application of compression apparel comes in the way of targeted muscle and structural support as a performance aid and a preventative step against overuse injuries.

ASICS' Inner Muscle shorts, based on the company's proprietary research, are designed as a training aid, providing increased resistance that strengthens the psoas muscle, which supports the spinal column and pelvis, resulting in improved form and stride and a stronger core.





The R1 knee-support tights from Opedix are designed to "unload" the knee through the use of a mechanical pull to counter the forces exerted when the foot strikes the ground, reducing the lateral movement of the knee joint that creates medial wear. In a soft brace-like manner, the R1 tights work with the leg muscles, ligaments, and ground-reaction forces to increase the physical functioning of the knee. The company's Opedix Posture Shirt is designed to support the upper body and reduce muscle fatigue caused by poor posture, and for runners, that means more fluid and consistent running form.

CW-X Stabilyx tights use targeted stabilization of the legs' muscles and ligaments to provide the kind of support for which runners would seek taping from trainers who apply wrapping in order to secure injured tissue to uninjured. Instead of tape, CW-X uses overlays of fabric to create a "Conditioning Web" to support the legs' soft tissue. The combined effect is to diminish hip, knee and quadriceps fatigue by supporting them and stabilizing and smoothing out the forward rotary motion of the leg.

For more information about the compression gear reviewed above, check out the individual companies' websites, linked below:

2XU: www.2xu.com
Asics: www.asics.com
Craft: www.craft-usa.com
CW-X: www.cw-x.com
Nike: www.nikerunning.com
Opedix: www.opedix.com
Oxysox: www.oxysox.com
Pearl Izumi: www.pearlizumi.com
RēcoFIT: www.recofitsports.com
Salomon: www.salomonsports.com
Skins: www.skins.net
Sugoi: www.sugoi.com
Zensah: www.zensah.com
Zoot: www.zootsports.com

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New compression running clothes are geared at improving performance and recovery. Determining if it's better than the looser-fitting gear you've been wearing for years might take some personal experimentation.