



SCARLET'S FLOWER



“Socks fabrics seem a minor clothing in apparel categories but are indispensable item for daily activities for users. The function of socks is either for heat insulation of body temperature in cold weather or heat releasing to keep thermal neutral for foot in hot weather. Socks with good quality are conducive to prevent foot disease or smelly odor from foot. The wearing comfort of socks can be affected by the fabric properties of thermal transfer...”

(Wang W. Y., Hui K. T., Kan C.W. m.fl. 2020)

Warm feet and successful women

On my study European Ethnology, we explore cultural practices in everyday life. If I could come with one sentence to describe everything I've learned: *Small details in everyday life has an extensive impact on people.* How you do your laundry, the soap in your bathroom, the plate you eat from and the clothes you wear every single day. It is all the little words, routines and your everyday thoughts, that creates you. All the little things and action are BIG to you and your overall wellbeing. The practice of putting on underwear and a pair of socks is for most people done EVERY SINGLE DAY.

Socks seem to be a minor in apparel. But feet are the most effective way to regulate heat, while thermal pain has a permeated impact on especially womens overall wellbeing and performance. Therefore, socks should be one of the most important items of the wardrobe, not a comma in a sentence, but an exclamation point! It can affect if you can reach and quality of orgasms, your verbal and cognitive performance, quality of sleep and so much more.

I will use the next pages as an overbrief on the science of the affects of thermal pain (feeling uncomfortable in the perceived body temperature), why feet are the best way to regulate heat and differences between sexes.

Disclaimer 1: Science about thermal pain are mainly based on male subjects, and



we're only just beginning to see women represented as test subjects and/or studies of the differences between the sexes. Therefore, if you dive into some of the science references unless if they explicitly mention women the numbers and study is based on men.

As I will argue later, thermal pain has higher consequences for women than men and most room temperatures will most likely be aimed at men's average comfort.

The seed of my business idea was rooted many years ago, when I read a study based on 13 straight couples, they went from reaching orgasms 50% of the time to 80% with socks on. They didn't differ in the data between the genders, but couples, so the orgasms for women might be even higher as they write that most of the men would reach orgasms by the partners stimulation, no matter what. This could mean that the effect is even higher.

I personally started having sex with socks on and spread the rumour to all women I met, who re-confirmed if they did it with what they describe as "thick socks". The current socks market for women: sexy designed socks are made in polyester or nylon which doesn't regulate heat and the cotton socks are often in an uttermost boring design. Women can have it all: orgasms and apparel items, that are practical, comfortable, sustainable, and beautiful. No less, no more.

I'll introduce you to the complications cold feet creates for women. Everytime you read about cold temperatures think = cold feet. I'll begin with explaining why feet are the best and most effective way to regulate body heat. Then I will explore the differences between men and womens body heat and percieved thermal pain. Lastly I will explain the posible benefits of having warm feet for women's overall health.

It is not a scientific journal. Therefore, you'll find the references under each section. I have inserted links under all opensource references, and secondly you'll find some "easy to read" news articles/interviews with scientists in the beginning of each section.

Quote from:

Wang, W. Y., Hui, K. T., Kan, C. W., Viseshpan, K., Areechongchareon, S., Tiyasri, S.,



& Mongkholrattanasit, R. (2020). A Study of Thermal Conductivity Property of Socks. Materials Science Forum, 1007, 118–124.

Feet are the key to body temperature regulation

Conclusion: Feet are the most effective way to regulate body temperature

Feet and hands have a massive surface area, with specialized blood vessels that can open and close quickly for blood and realize heat when necessary. Feet and hands are the end limbs of the body which doesn't have a lot of muscles (that produce heat), which also means they cool down much faster than the rest of the body. According to prof. J. Cotter feet are the most effective way to regulate body temperature. And although technically when you heat up your feet it doesn't instantly increase your body temperature, but in people's own perception it feels almost instant when you go from cold to warm feet. Feet get cold, very cold fast, which activate pain receptors. Therefore, it feels like an immediate difference because the pain receptors are being turned off.

References:

Interview m. J. Cotter: <https://www.stuff.co.nz/science/7205016/Ask-a-scientist-Feet-keep-us-warm>

Beery, A. K., & Zucker, I. (2011). Sex bias in neuroscience and biomedical research. Neuroscience and biobehavioral reviews, 35(3), 565–572.

Ko, Y., Lee, JY. Effects of feet warming using bed socks on sleep quality and thermoregulatory responses in a cool environment. J Physiol Anthropol 37, 13 (2018) <https://jphysiolanthropol.biomedcentral.com/articles/10.1186/s40101-018-0172-z>

Elizabeth, T. & Tipton, M. & Caldwell O., Joanne & Heuvel, Anne & Machado-Moreira, Christiano & Taylor, N.. (2009). The roles of hands and feet in temperature regulation in hot and cold environments. Faculty of Health & Behavioural Sciences -



Papers.

<https://www.lboro.ac.uk/microsites/lds/EEC/ICEE/textsearch/09articles/Nigel%20Taylor.pdf>

Wang, W. Y., Hui, K. T., Kan, C. W., Visesphan, K., Areechongchareon, S., Tiyasri, S., & Mongkholrattanasit, R. (2020). A Study of Thermal Conductivity Property of Socks. *Materials Science Forum*, 1007, 118–124.

Thermostat wars

Conclusion: Women are more sensitive to thermal pain, most spaces and room temperature recommendations are based on men's bodies. Warm feet can make women: perform better verbally and cognitively, experience more and more intense orgasms, increase productivity at work, extend their deep sleep.

The 'thermostat wars' are framed as a battle of the sexes, with men preferring cooler temperatures and women preferring warmer climates. As most scientific temperature recommendations, offices and public spaces are based on a 1966 formula specifically designed to keep 40-year-old men comfortable. 'Thermostat wars' is a phrase to describe the sex differences. Men are 15-20% bigger than women in bodymass, has a different core temperature and even thermal pain are experienced different between the sexes

The study of cognitive and verbal performance in thermal pain (2019) is based on 543 test subjects (students). Chang TY, Kajackaite A concludes that within the temperatures of 16-33 Celsius, women generally perform significantly better in higher temperature and men perform best at lower temperatures. Another key point in this study is that: "...the increase in female cognitive performance is larger and more precisely estimated than the decrease in male performance". This means that although men also do a little better in cold temperatures it doesn't correlate with the difference for women.

Averbeck, B., Seitz, L., Kolb, F.P. et al (2017) concludes that women are more sensitive to thermal pain. Which means that thermal pain has more consequences for women than men. And again reaffirms the study above, where women performed



verbally and cognitively significantly worse than men in warm temperatures.

In a study of Aircondition regulated offices in Quatar, India and Japan by Indraganti, M. and Humphreys, M. A. (2021), this is the researchers own highlights:

- Women are more sensitive to temperature than men in Asian offices.
- Women are considerably more dissatisfied than men with their thermal environment.
- These environmental parameters are temperature, air speed, lighting and noise levels.
- This dissatisfaction is likely to affect their productivity.
- We suggest individual personal control as a remedy.

Women are more sensitive, uncomfortability affects their perceived productivity also in warm countries. This display the need for heat regulating socks globally and not just in cold countries. Any temperature regulated room where men and women are together will most likely be problematic for women.

In the study by Ko and Lee (2018) they explore sleep with and without socks on male test subjects. Although I have only found similar studies on male subjects, we can theorize a bigger impact on women and women sleeping in rooms with men.

”Feet warming using bed socks during sleep in a cool environment had positive effects on sleep quality by shortened sleep onset, lengthened sleep time, and lessened awakenings during sleep but had no significant influence on core body temperature. These results imply that sleep quality could be improved by manipulation of the foot temperature throughout sleeping”

In total, the subjects slept 32 minutes longer on a night's sleep with socks on, and they fell an average of 7.5 min. faster in sleep. The big BUT is that in their subjective evaluation, ie the



questionnaire they answered upon awakening, they didn't report any difference in their experience of the sleep. Which for marketing purposes is a little harder to brand.

It is significantly easier to have orgasms for women if they are wearing socks. It is not a particularly researched topic, but in 2005 a study was conducted at Gronningen University in the Netherlands, in which 13 heterosexual couples participated. Where women were at least 30% more likely to orgasm if they wore socks. It has to do with the fact that cold feet trigger fear or rather pain receptors. Wearing socks is both about feeling comfortable and being able to be present. According to Kontula, O., & Miettinen, A. based on five Finnish national surveys over several years concludes that the most important indicator of a woman's orgasm is that she feels emotional security. Cold is a danger to the body and can therefore be a major brake on being able to achieve and enjoy orgasms.

Sonia Pieramico, whom I have interviewed, PhD at the Sex Lab at Porto University, to get a better understanding of the field of sexuality. She is the only one who has studied the difference between anorgasmic (no orgasms), multiple orgasmic and one orgasm. The difference she found lay in their answers of five facet mindfulness questionnaire. It showed that the women who did not achieve orgasms at all scored very low on being mindful up to and during intercourse. She believes that there is a lack of studies and that there are too few users for e.g. to say that it is 30% easier to achieve orgasms. But it would make good sense to make women feel more secure and comfortable, thus socks would in theory be able to make a big difference to women's sexual well-being and the ability to achieve orgasms according to Sonia (I have been allowed to use snippets of interviewed for SoMe content, etc.).

Women wearing warm regulating and breathable socks may:

- Fall asleep faster and sleep longer naturally
- Feel a greater emotional security, and thereby have more and better orgasms
- Increase their productivity

Fast articles:

<https://www.shape.com/lifestyle/sex-and-love/wearing-socks-orgasm>

<https://www.discovermagazine.com/mind/room-temperatures-set-for-mens-comfort-may-disadvantage-women-study-finds>



Refferencer:

Averbeck, B., Seitz, L., Kolb, F.P. et al. (2017) Sex differences in thermal detection and thermal pain threshold and the thermal grill illusion: a psychophysical study in young volunteers. Biol Sex Differ 8, 29

<https://bsd.biomedcentral.com/articles/10.1186/s13293-017-0147-5>

Chang TY, Kajackaite A (2019) Battle for the thermostat: Gender and the effect of temperature on cognitive performance. PLOS ONE 14(5).

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<https://recil.ensinolusofona.pt/bitstream/10437/10039/1/DEFENSE%20VERSION%20THESIS%20Sonia%20Pieramico.pdf>

Textiles and temperature and breathability

My idea bloomed out of a frustration with especially lack of heat regulation in polyester/nylon socks, and on the other hand lack of beautiful designs of eco-friendly



"tennis socks" in cotton. The problem with newer materials such as tencel, lyocell hemp or bamboo, is either lack of softness or that they can't cope with hard washing (high temperatures or dryer). Although there is a shift in washing routines, and people's perception of, when something is clean enough. There will be a constant risk of people washing socks with underwear on more than 30 degrees, which will ruin a pair of Tencel socks. It's mainly based on my designer, Sara Daae Christiansen and AFI Socks who have advised me to use organic cotton (80%). Afi Socks is both the oldest and largest sock manufacturer in Portugal, and they make socks in everything, including bamboo and tencel.

"Nature fiber products, especially cotton fabrics, are highly popular with people and widely applied in daily life because of their excellent properties, such as wearing comfortability, flexibility, water absorptivity, and breathability"

Xu, Q., Duan, P., et al. (2018).

AFI Socks strongly recommended that if they were to be soft, warm, breathable and as durable as possible - the answer was promptly that I had to make it in about 80% organic cotton and 20% polyester. This makes them both warm, breathable, withstand hard wash cycles, and polyester ensures they keep their shape. Socks are pretty much washed after every use. This creates a risk that women (who are mainly responsible for laundry in households) will wash them incorrectly and that this will have a negative impact on the brand.

In this small section I will focus on the warmth and breathability possibilities and limitations of different textiles.

West, Havenith, G., & Hodder, S. (2021) compare socks versus no socks in shoes. The data is based on ten women running on treadmills w/ socks on in different materials. Although they compare cotton with wool and polyester, they cannot conclude any difference between the different types of socks. However, the testers report that cotton was significantly warmer and felt wetter after running. Cotton socks are according to this study not most optimal for sports, but one can imagine that for all-day use and especially for thermal insulation, the subjects' experiences support that



cotton socks will be more warming, than polyester, wool or nylon. The problem of wetness should not occur in everyday use because the amount of sweat produced will evaporate continuously. Havenith and Hodder conclude: "... The sock is therefore an important area for development and relevant for overall improvements in footwear comfort".

According to Van Amber and Laing (2019), where participants suffered from diabetes mellitus, over a period of 22 weeks they examined and self-reported changes in feet. As well as measurements that were taken continuously (skin hardness, stratum corneum hydration, transepidermal water loss and temperature were measured). However, evidence was limited, but in all cases when skin health improved, the researchers attributed the improvement to socks made primarily of "wool" (both wool and cotton).

Wool and tencel also provide good options for both foot and soil climate. But these fabrics come to require much explanation about gentle washing to the user, which is a choice one can make when being a more established brand.

Van Amber, Laing, R. M., Wilson, C. A., Dunn, L. A., & Jowett, T. (2019). Effect of sock type on foot health. *Textile Research Journal*, 89(18), 3871–3881.

West, Havenith, G., & Hodder, S. (2021). Are running socks beneficial for comfort? The role of the sock and sock fiber type on shoe microclimate and subjective evaluations. *Textile Research Journal*, 91(15-16), 1698–1712.

<https://journals.sagepub.com/doi/pdf/10.1177/0040517520986511>

Xu, Q., Duan, P., Zhang, Y., Fu, F., & Liu, X. (2018). Double protect copper nanoparticles loaded on L-cysteine modified cotton fabric with durable antibacterial properties. *Fibers and Polymers*, 19(11), 2324-2334



Other sock brands

Happy Socks®

Theme: colorful, fun socks in cotton

They sell "happiness" through colorful and fun designs with a male target audience. They have now been around for more than a decade, and are the most successful and largest sock brand ever (possibly the first global sock brand?) with sales in 90 countries and approximately 12,000 retail accounts. Happy Socks has over the last 4 years grown annually by 50% revenue and has generated sales of more than +\$100 million.

Funny, in interviews they say that dots in particular both at the beginning and throughout the process have been popular. Indeed, either the polka dot or sports sock is the most popular of the current designs with my target audience.

They are an established brand that started with wholesale to retail, but actually it took them 6 years to succeed with Ecommerce.

They sell a pair for 20-25,- euro, which is their base price with some offers on three pieces or stock sales.

Genuine brand, smart that "Happy" is their theme from name, to design, to word choice.

Cons: Not organic, users perceive organic products as more sustainable and "natural". Lack of focus on sustainability.

You can't see where the product comes from?



John's Crazy socks

A minor side note story with some pretty amazing growth.

John's Crazy Socks has is a father/son business where the son has Down's Syndrome. The first with Downs to win the "Entrepreneur Of The Year 2019" New York award.

They also basically just sell happy colorful socks like Happy Socks. Only through their Ecommerce, and then they have a huge focus on the son's Down Syndrome

"...John Lee Cronin, a young man with Down syndrome, and his love of colorful and fun socks, or what he calls his "crazy socks." We're on a mission to spread happiness..."

"Mission to spread happiness" is literally what Happy Socks has been branding itself for over a decade.

But according to John's Crazy Socks themselves, they have revenue of \$1.7 million the first year and \$5.5 million the year after.

Their website and selection is mind boggling, you can get anything. Including socks with no pattern or color and the vast majority are made of nylon/polyester. Prices are day and night.

Their "Sock of the month" club is a big focus, with prices starting at \$13.99 per month with free shipping. US only.

Cons: All products are "imported", no sustainability, cluttered website, overly wide selection.

Swedish Stockings



SWEDISH STOCKINGS CONSCIOUS PANTYHOSE

THE ONLY SUSTAINABLE HOSIERY BRAND WORLDWIDE.

Swedish stockings claims to be "the first sustainable hosiery brand worldwide"

Founded in 2013

Revenue \$8mio.

Pro/cons: Beautiful and eco-friendly, but made of nylon which is neither breathable nor heat insulating.

Socks knee high for £18

Danish Endurance

Compression socks in organic cotton

One pair 55,- euro, knee high

Not sold in pharmacies only online.

Design is very sporty/medical

Walleriana

Sexy compression socks, started in 2015, no retail only ecommerce

Wallerina makes sexy compression socks in nylon.

Beautiful simple designs in nylon, and their SoMe and Ecommerce seems to focus on pregnant women and women 25-35 years old.

Price:

50 euro over the knee.



25 euro Knee high

60 euro essential tights

Benefit: The first on the market with great looking compression socks. Works to target pregnant, and to a lesser extent elderly.

Problem: The name doesn't make sense and SEO is lacking. Made of Nylon, which is neither heat insulating nor breathable.

Sidenote: We can make them in a nice design in 50% cotton, which is both warming and breathable. Warm feet=well-being. We can play on sexuality throughout all parts of life. Just because you're old, have diabetes or are pregnant, doesn't stop you from feeling sexy, and comfortable. If not, that's even more important when your body is changing so drastically.

Production cost

Minimum Order Quantity (MOQ) 1000 pairs per model, 500 pairs per color, 250 pairs per size.

- Knee High Sporty: 1000 pairs (size spread TBD)
- Knee High Flower: 1000 pairs (size spread TBD)
- Knee High Dotted: 1000 pairs (size spread TBD)
- Knee High Lace: 1500 pairs (750 pairs White + 750 pairs Black / 250 pairs per size)
- Ankle High Sporty: 1000 pairs (size spread TBD)
- Ankle High Flower: 1000 pairs (size spread TBD)
- Ankle High Dotted: 1000 pairs (size spread TBD)
- Ankle High Lace: 1500 pairs (750 pairs White + 750 pairs Black / 250 pairs per size)

KNEE HIGH

- SPORTY : 2,55€
- FLOWER: 2,88€



- DOTTED: 3,01€
- LACE (compression): 3,62€

ANKLE HIGH

- SPORTY : 2,07€
- FLOWER: 2,24€
- DOTTED: 2,40€
- LACE(compression): 3,02€

Shipment B2B

After a meeting with Logisnap <https://logisnap.com/>

I can't come with a clear estimate, but it will be something I can pay out of the current capital and secondly to cut down cost, I will move physically to Portugal for Freight and shipping with the first B2B orders and set up the system for DTC.

Why B2B

Big orders can meet MOQ, creates many users of the brand, will generate enough money to meet the MOQ necessary to go DTC. Downside: small profit margin

Firstly I'll target expensive airlines, as we can produce beautiful compression socks instead of 100% nylon/polyester, we can do it in 50% cotton and create luxurious designs than the current compression socks on the market and both make it pantyhose and socks.

I'll target the airlines that has already shown interest in the comfort of their stewardesses by either removing high heels requirements and/or giving the option for trousers instead of skirts for women.

By having 50% cotton, the socks become more breathable and thereby much more comfortable to wear for many hours in a row.

For us it will create brand awareness and testimonies for the brand, although not specifically for the sex socks part.

Secondly I will target pharmacies also with the compression socks, as most pharmacies currently only sell nylon/polyester.



Before going DTC our compressionsocks are the best product b2b, because the profit margin is much higher. The sex socks will also be valuable to sell at retailers, but not as the first stop as the profit margin is too small for an unknown brand and to get the brand up and running

