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theoretical dissertation

**"Which hiking shoes design will
target a younger audience?"**

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p r o b l e m d e f i n i t i o n

I've been interested in shoes and sneakers for a couple of years now. After writing the essay about "Women in the sneaker culture",¹ where I researched the sneakerhead market and why women are often left out based on the lack of design or sizes, I concluded that I want to pursue this issue a bit further. I did look into the shops and selling strategies of sportswear companies and my interest hasn't decreased. I have been researching the background and why sneakers companies often produce only men sizes although the fit is the same.

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Sportswear has become a part of our everyday life and connection to nature the same as fitness is more popular than ever. Materials that shoes are made of help us to reach our goals in sport, they need to match the high-performance and our expectations on durability. Each sport has its requirements for shoes.

Hiking is very popular in Switzerland. It is part of school education ²and weekend hobby for many people.

I was usually hiking in the wrong kind of shoes because I couldn't find the right match for my taste. The Adidas Torsion sneakers that I wore to hike on the Pilatus were a wrong choice. The soft unstable upper with not enough grip on the sole could've possibly lead to a situation where I could've injured my ankle.

Looking for the right shoes in the stores left me pretty disappointed. The selection is unsatisfying, same designs in different crazy color combinations.

I have decided to research the hiking boots because I see a market and a target group of young people that is not yet covered. I think the future in functional clothing is about being practical and fashionable at the same time. That's why I have chosen functional clothing as my dissertation theme with the focus on hiking shoes.

1. O. Medvedeva; Seminar work "Women in the sneaker culture", 2018.

2. I hiked on Pilatus in 2016.

objective and organization of research

My goal for this dissertation is to gain knowledge in the field of outdoor sports gear I am not familiar with yet. Outdoor clothing has always been something I've avoided due to lack of design. Designing shoes and making a prototype would be my next challenge.

I want to find out the bridge between functional clothing/sportswear and lifestyle fashion. Can shoes make a crossover and be both at the same time?

What criteria do I need to consider while designing a boot? What materials do I use for outdoor clothing and shoes? How many components does a shoe include? What are the standards for hiking boots and what's on the market?

After my research in the technical field, I can use that knowledge to my advantage in the practical part. For the prototype I will need to know which materials are suitable for cold and hot weather conditions. How to make the shoe comfortable and yet stylish and able to compete on the market? What color scheme do I need to choose to meet my target audience expectations?

background

"Sport has more to do than anything else with the evolution of the modern mode; ... there is only one thing of which everyone is convinced... and that is the perfection of the adaptation to the needs of the game which modern dress has evolved"

British Vogue 1926

The craze about sports and Olympics started in the nineteenth and early twentieth century in Europe and America. The increase in commercialization of sports led to changing of a attitude of the consumers towards their use of free time and their financial resources.

Through the changes in international media and advertising the athletes started to get promoted as independent celebrities and teams positioned as assets. This process was primarily an American strategy of the commercial entertainment industry that persisted and dominates the world today. At the same time, modern fashion was developing in a new direction. In the nineteenth century, clothing was the primary indicator of wealth and a social status, which later changed to the mass reproduction.

Sports outfits were not always practical: the traditional aristocratic sports dress was button-up, made out of tweed textile jacket with pockets and a belt. This garment was used in a different kind of sports such as bicycling, fishing, shooting, golf, or walking. When cricket became popular in British colonies around 1860, the uniform that consisted of white flannels, white shirt, team blazer, knitted pullover and a cap remained the same, even though they were impractical, because changes were resisted.

After the athletes became heroic and a part of a sports cult, sports fashion also started to develop. The uniform of football players in the early twentieth century started to change: new materials were in use, shorts got shorter in length and the boots got lighter compared to the previous models.³

That's when people would see, that a change in the sport and fashion ideology will spread across national and cultural boundaries. In Soviet Russia sports culture and image has become a cult and was often used as an agitprop. The stadiums were not only used for exercise but also for political events.

From the 1920s to the 1970s tennis witnessed its revolution and developed some looks that became fashionable and migrated between court and catwalk. The tennis dress became a clean look of elegance. At that time in 1933, tennis player René Lacoste established his clothing company with the knitwear manufacturer André Gillier with the name Lacoste and its logo of a crocodile badge.

Cultural theorist Andrew Blake suggests

*'at one level clothing is crucial to the success of the performer. Ski pants and cycling helmets are designed to increase airspeed through diminishes wind resistance... shoes are made for grip and spin... There is no doubt that... the redesign of the body which is offered by leading manufacturers can help to improve the performance of a leading athlete. There is equally no doubt that no manufacturer would develop various sports goods simply so that they can be worn by a few dozen... successful professionals... Sports goods fulfil one or both of two functions: they help the amateur to play to a high standard and help those who cannot even hit a ball to identify with the player or team of their choice'*⁴

3. Salazar, Ligaya. *Fashion V Sport*. V&A, 2008, P.24

4. Salazar, Ligaya. *Fashion V Sport*. V&A, 2008, P.31

The image of sports lifestyle kept developing into the body obsession and has become an ideal image of immortality. A celebrity is put on a pedestal in almost erotic obsession. From the twentieth century until today sports celebrities are selling the image of power and physical attractiveness, often in a male figure.

In the time when men's fashion was transforming from formal to more casual, women's clothing remained the same and had less connection to sportswear.⁵ Advertising masculinity to men in the underwear campaigns became acceptable with brands using sports celebrities such as David Beckham or Cristiano Ronaldo.

Women's bodies are often look at and objectified as the desired object. Semi-naked women bodies used in adverts that are not advertising the body or a product for a body, use female sexuality to get more sales. Men previously didn't gaze at other men without being accused of being gay. It became acceptable⁶ for men to look at a defined and youthful body of a male as the body culture became more popularised.⁷

In the Calvin Klein underwear campaigns, bodies of both men and women are presented sexually. The sentence "I ____ in my Calvin's" is containing a sexual message in some pictures which might be misleading for a younger audience. A woman sitting on a man's lap, or a hand of a woman that is touching herself isn't the image that should be on billboards advertising for underwear. In our age of social media marketing management of big companies need to be more cautious about what message they spread in society.

Today we live in a world with fast fashion where trends change 2 times per year. Nobody is impressed with a simple pair of sweatpants or just regular sneakers. The sportswear needs to be functional and fashionable at the same time. Depending on a budget and personal taste we fall for the hype around a specific brand that is "in" right now. Wearing last year's collection is shameful which puts on pressure if you want to stay in trend. More and more fashion brands adopt the casual look from the sportswear brands such as Yeezy, Gucci, Off-White, Balenciaga and Vetements.

Sportswear or sport-inspired fashion unites people from all over the world. The main goal is to fit in, but also to stand out. Everyone wants to look their way without being the outcast of a group or a community.

Sneakers, sweat pants, and hoodie are one of the most popular sportswear and also the most diverse. Being a sneakerhead or a sneaker collector requires hunting on the rarest and the most wanted sneakers. Wearing sneakers is not enough; you have to have the limited editions and rare pieces that nobody can get.

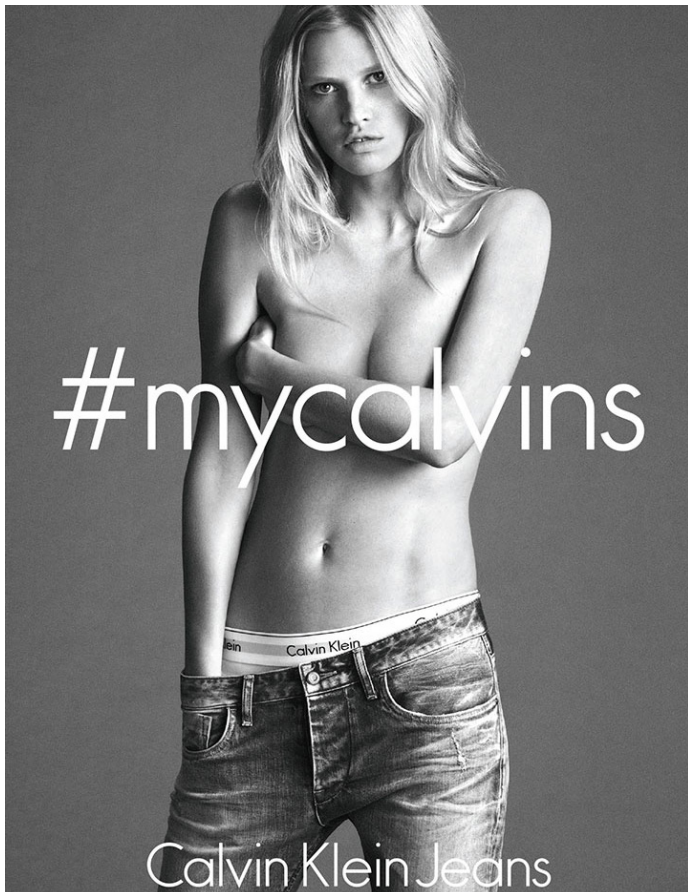
A great way to show your individuality is to customize your clothing or to combine them for your taste. For example, on the Nike website with Nike i-D you can create your sneaker colorway of your favorite model with a text or your name stitched onto it. You can let Shoesurgeon⁸ customize your shoe with a python leather or do it yourself in one of his courses.

5. 1950s. Morris, 4. August 2016, "Women's Sports History." National Women's History Museum, www.womenshistory.org/articles/womens-sports-history. (accessed on 12. May 2019)

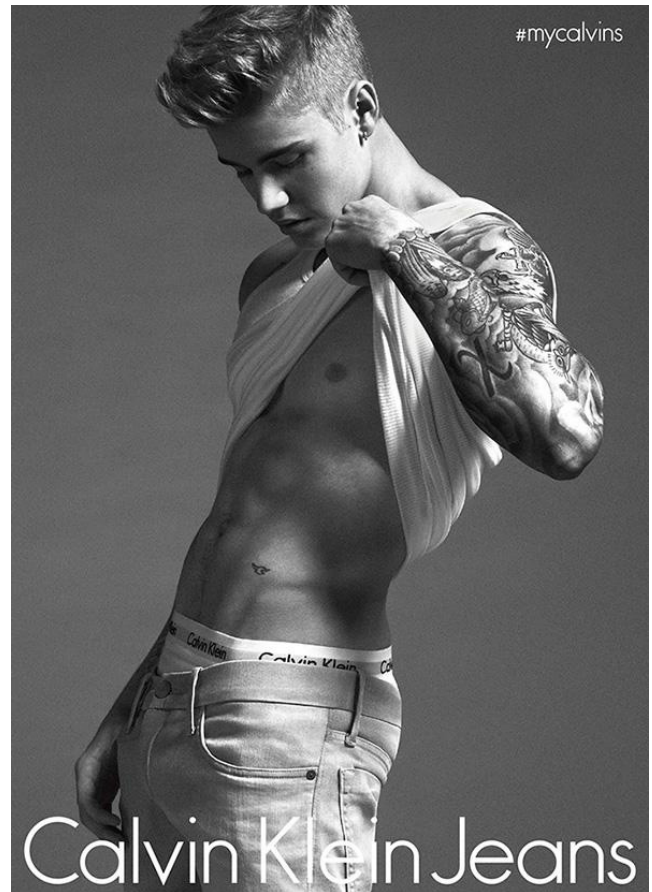
6. 1970s. Kunitz, "How Art Has Depicted the Ideal Male Body throughout History." Artsy, 5 Apr. 2017, www.artsy.net/article/artsy-editorial-art-depicted-ideal-male-body-history. (accessed on 12. May 2019)

7. Salazar, *Fashion V Sport*. V&A, 2008, P.103

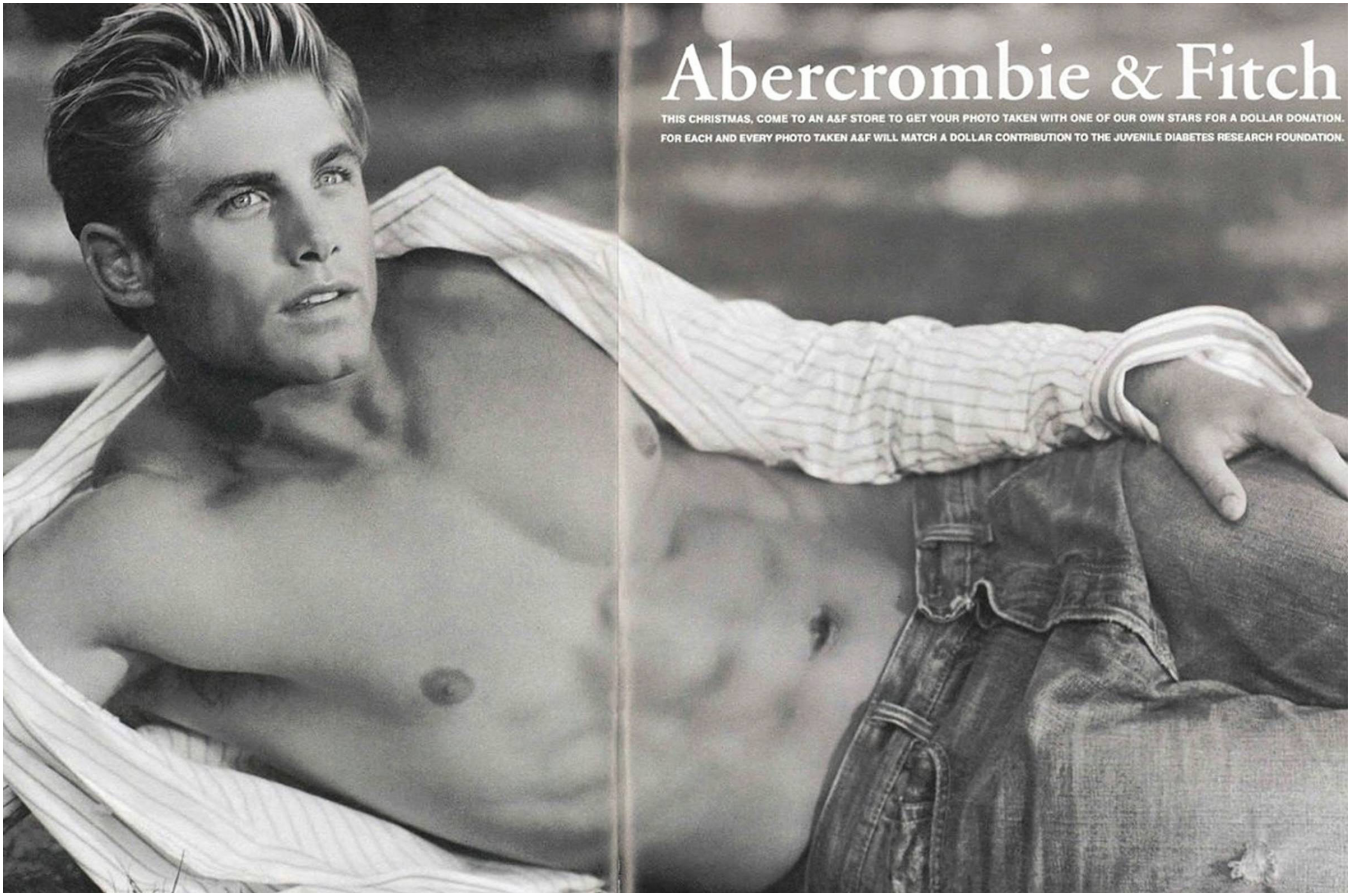
8. Shoesurgeon runs a sneaker customization business where he uses exclusive and expensive materials to customize the shoes, he also has teaching courses, for anyone who wants to learn the techniques he uses, theshoesurgeon.com/. (accessed on 12. May 2019)



1.Lara Stone for Calvin Klein



2.Justin Bieber for Calvin Klein



Abercrombie & Fitch

THIS CHRISTMAS, COME TO AN A&F STORE TO GET YOUR PHOTO TAKEN WITH ONE OF OUR OWN STARS FOR A DOLLAR DONATION.
FOR EACH AND EVERY PHOTO TAKEN A&F WILL MATCH A DOLLAR CONTRIBUTION TO THE JUVENILE DIABETES RESEARCH FOUNDATION.

3.Danny Smith for Abercrombie & Fitch

market and color study

Reviewing the current market for commercially available solutions is helping me to understand the design problem and possible trends in product development. I have collected product examples and classified them by color.

The two pictures on the right are a library of colors that I found on several outdoor activities stores websites. I have screenshot a range of products that were on the websites at that time and aligned them in different color groups.

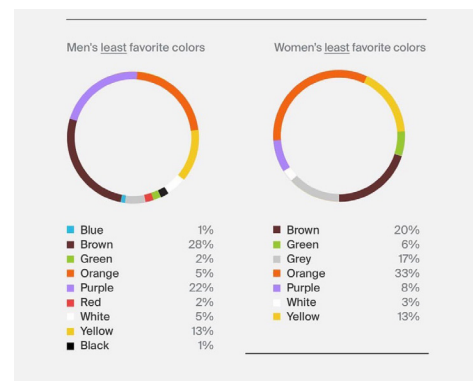
Hiking boots tend to be more neutral in color than the apparel section. Throughout the stores there was a tendency in what's popular. Women's hiking boots are usually blue and berry colored with all the neutrals black-grey-brown-beige colors in between. Blue seems to be the most popular color because there were more examples than I could put in the picture.

According to the color studies women do tend to prefer a blue color scheme and colors such as cerulean, azure, baby blue, beryl, cornflower blue, robin's egg blue, and sapphire. Turquoise, a mix between blue and green, is also more liked by women than men.

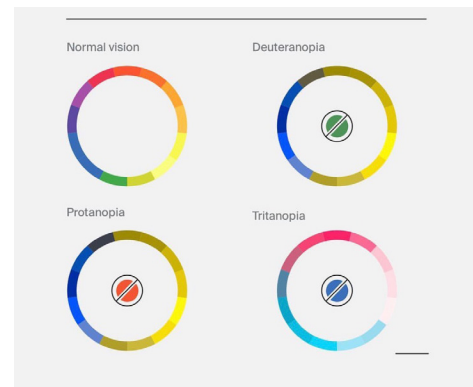
"Like men, women like blue and green but women are also strongly drawn to the blue-green mix of turquoise. Among their least favorite colors are neutral brown and gray."

– Jaci Howard Bear, Desktop Publishing Colors and Color Meanings.⁹

It is understandable why women prefer blue and green because they have a very calming effect on our bodies and mind. It's not surprising that spa resorts usually use natural colors in their interior choices.



4. Instagram: @lubosvolkov



5. Instagram: @lubosvolkov

9. Jaci Howard Bear, <https://www.lifewire.com/what-are-womens-favorite-colors-1077397>, (accessed on 12. May 2019)



6. Hiking boot sortiment 2019



7. Apparel sortiment 2019

defining a client

To define a client, we need to observe different criteria about how we choose the shoes and what are the values that the client is looking for in my design.

There are generally very different personas choosing a hiking boot. From a kid to a senior, from a nature lover beginner to an expert athlete. Defining a target group is necessary to meet the product expectations of a future client.

Let's define 3 fictional personas that could be interested in new hiking boots concepts on the market.

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The target group could be people of all ages that are interested in a new concept of a hiking boot. There are plenty of brands that keep their classic leather hiking boots as an original design, but after a poll on Instagram, people's opinions were similar to mine. I asked my followers if they own a pair of hiking boots and what do they find annoying or uncomfortable about them.¹⁰ Heavy boots and brown colorway were frustrating to lots of people. The lack of design choices was also one of the most popular opinions.

3 women that I chose as my target personas represent different age groups in different life situations. I believe that my design is made for people who dare to stand out instead of being invisible. Enjoying a walk or a hike while looking great is essential to them as well.

10. 13. March 2019, 34 people answered the poll



Milana

Age: 16

Job: finishing school

Hiking: necessary trips
with school and parents

- needs hiking boots for a
school trip with her class
- wants to impress friends
- loves taking pictures
- parents will pay

Sarah

Age: 25

Job: sales assistant

Hiking: goes hiking to see
cool places and for pictures
with friends
has a dog, so they walk a
lot

- looks are important
- buys designer clothing
- hypebae
- opinions on her looks from
her friends and followers are
very important for her
- sneaker freak

Christina

Age: 34

Job: real estate agent

Hiking: loves hiking in
the summer to explore
new places

- doesn't have kids yet
- loves designer shoes
- feels young and stylish

materials

The fabric used in protective garments or for hiking boots is often different from other garment fabrics. It needs to move easily with the body, or the construction need to allow for full body movements, depending on the activity for which the garment is used. The ideal fabric for the body that allows 100% body movement is stretchy, flexible, lightweight and breathable.

Fitness clothing for women, for example needs to be stretchy enough to allow exercising, breathable for the sweat transportation and thick enough to avoid expansion and transparency of the fabric. The latest innovation -full knitted body garments- expand and shrink with every movement which makes them more comfortable than garments with a lot of seems.

If the garment material isn't stretchy, it must be flexible. Some clothing items are usually layered, such as a jacket over a shirt or a sweater or socks for shoes. The friction between two materials needs to be considered while designing a shoe or a garment.

Some important factors for designers are:

- ease (the difference between garment and body measurements in each garment area)
- cut or contour (the shape of pattern pieces, and the relationship of garment segments)
- fit (fit of a garment on different body shapes and sizes)

Before designing a garment of the chosen material, an activity needs to be defined for which the design works best. The body garment needs to be cut for a better body movement. A skier, for example, has another body movement than a climber, which requires a different cut of the protective clothing.

For the hiking boots there are different variations of materials based on season and weather, terrain and weight.

The main categories are full grain leathers, nubuck leather, and synthetic materials. To choose the right shoe, you need to know what hiking trip you want to do.

-Leather shoes are sturdy and durable, naturally water-resistant and breathable.

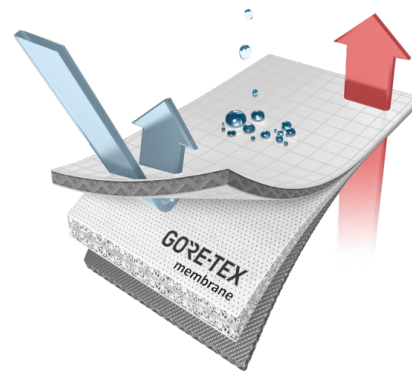
-Nubuck leather is less durable than leather shoes but more flexible.

-Synthetic shoes are usually less expensive than leather ones and lighter. They need a membrane to stay waterproof.

To make hiking boots waterproof, unique synthetic fabrics are used. The density of fine fibers repels the water from its surface.

Water-resistant or water-repellent fabrics prevent the penetrating of water inside in their layers. Unique fiber, weave or surface treatment is keeping the water away in light rain. The apparel or shoes do not stay dry over a longer time in contact with water or when pressure is applied.

Waterproof fabrics are capable of keeping the feet dry and exclude any water penetration inside. Waterproof fabric Gore-Tex is breathable because it is microporous, and the moisture can go through keeping the person dry from the inside and outside. Gore-Tex was developed by W. L. Gore & Associates in 1969.¹¹



8. Gore-Tex membrane

11. "Gore-Tex." Wikipedia, Wikimedia Foundation, 9 Apr. 2019, de.wikipedia.org/wiki/Gore-Tex. (accessed on 12. May 2019)

Micropores are many thousand times smaller than a drop of water but more substantial than water vapor. Gore-Tex is laminated in different layer fabrics. The membrane is made by heating and stretching a thin layer of Teflon. After stretching, the membrane develops tiny holes that make it breathable. Then, the membrane is laminated with other fabrics creating a water barrier.

Leather - usually from cows or pigs - is another prevalent material for hiking or backpacking shoes. Full-grain leather and Nubuck leather are the two most popular options.

Full-grain leather contains the full layer of skin. Durable, but develops a patina over time. Is considered the highest level of quality in the leather category.

Nubuck leather compares to full-grain leathers. The top layer has been sanded and buffed to make a velvet-like surface, a step down from full-grain leather in durability, but a step up in terms of flexibility.

Our body adjusts to temperature changes by releasing heat. Heat is the transfer of energy from one object to another as a result of a temperature difference. Objects do not contain heat; they contain internal energy. This phenomenon can explain the increasing heat level in shoes by conduction. Two surfaces such as feet and shoes touch each other for a more extended period releasing heat. If a shoe isn't made from a breathable material, the heat, and water evaporation stay in the shoe, decreasing the comfort and increasing friction. Barriers as Gore-Tex can make the shoes breathable and waterproof at the same time.

Other factors such as body size, age, gender, race, and the environment are also playing a significant role in generating and conserving heat in a body. Older people are usually feeling colder because of the loss of subcutaneous fat. Since muscles are a better heat transfer than fat, men are usually having better heat circulation in hands and feet than women and seniors.¹²

Having cold hands and feet can feel more extreme, than the cold torso. That's why it's essential to choose the right shoes for the right trail and weather conditions, so the thermal balance is kept within the norm.

The fit of the shoe can also be an essential factor in thermal regulations. A tight fit would cause an effect on blood circulation and feet temperature. This condition could lead to injury and swelling caused by friction when shoes are too tight or too loose.

Choosing hiking boots, these criteria need to be met:

- extra space to allow spreading of toes
- the firm grip around the heel
- lightweights
- softness and articulation
- steady outer sole
- grip to the ground

construction

1. Scree Collar

This top collar of the boot on the inside helps to keep your ankle secure and any dirt away from getting inside.

2. Upper

The top part of the boot. The upper is usually made of leather, textile or a mixture of the two.

3. Tongue

Hiking boots have a gusseted tongue. The purpose of a gusseted tongue is to help keep water or dirt from getting into your boots. It also provides a layer of cushioning around the top of your foot.

4. Lugs

The lugs are what makes up the pattern on the outsole and provide the traction and grip on surfaces.

5. Lace Eyelets

Laces thread through to enable you to tie your boots up.

6. Toe Box

To protect your toes from branches or rocks.

7. Midsole

The midsole is the part of the boot that absorbs the shock and hit from the terrain. It sits between the outsole and the insole. Many times there can be more than one midsole to aid the sturdiness of the hiking boots.

8. Outsole

The outsole is the part of the boot that provides grip and traction on the ground. Thicker and deeper lugs provide more grip on the muddy ground while thinner lugs and grip lines provide better grip on rocky ground. You often find a combination of the two on hiking boots.

The outsole is usually made up of rubber technology. Such companies as Vibram or Michelin produce the outsoles for different brands.

9. Welt

On many hiking boots you see what looks like thick stitching on the rim of the boots where the upper connects to the sole. This stitching is called welting. There are different types of welting. Some common ones are Norwegian, Littleway, Goodyear, Outside Stitch down, cementing and injection molding.

10. Backstay

The backstay is a strip of leather that runs up and down the back of the boot lining to stiffen and support the boot and hold up the top, which gets the most movement.

11. Liner

Not visible in the picture above, but all hiking boots have an internal lining. Some, not all, have a waterproof liner, for example, Gore-Tex membrane.

12. Shank

The shank is a thin metal or heavy plastic strip in the sole of the hiking boots. It is used to help reinforce the wearer's arch and provides support for the bottom of the boot. A full shank goes to the toe while a 3/4 shank goes to the ball of the foot. The shank is usually glued, whipstitched, or tacked into place.

13. Footbed / Insole

A footbed is effectively an insole. They provide cushioning for the base of the foot, and they're usually removable in good hiking boots and trail shoes.¹³

13. "How To Choose Hiking Boots And Trail Shoes." Coolhikinggear.com, 27 July 2018, coolhikinggear.com/how-to-choose-hiking-boots-and-trail-shoes. (accessed 12 May 2019)



9. Hiking boot components

hiking boot vs. hiking sandals

Looking up hiking boots on the internet made me curious about other hiking shoes such as hiking sandals. What are the sandals in the first place?

“Sandal” comes from its Latin name *sandali-um*. Sandals are the most ancient and simplest foot covering consisting of a sole and a configuration of straps. Western culture traces the origins of the sandal from ancient Egyptian tombs dating about 5100 years ago. Sandals were status-oriented for the elite, beginning with the Pharaoh and working down the ranks of society throughout the Egyptian dynastic period, so that by the period of Roman occupation around 30 B.C.E. all but the very lowest of society were permitted to wear footwear. Wearing footwear was still mostly for outdoor activities such as traveling and was never worn inside even by Pharaoh.



10. Ancient sandals



11. Evening sandals

After the 1789 Revolution, the new French republic looked to ancient Greece and Rome for inspiration and a sandal made a comeback into fashion. The style of a sandal got mixed with the ballerina slipper which was called a “sandal-slippers.”

Women’s evening sandals in the 1950s used the barest of straps to give the illusion of no footwear at all as if the wearer was walking on tiptoe. They were extremely uncomfortable and quick steps proved impossible without losing a shoe in the process.

In the late 1960s, hippies introduced “Jesus” sandals. Simple leather toe ring or V-strap sandals were imported from Mexico and Asia and popularised on American streets. Birkenstocks sandals became popular in the 1970s as “health” sandals in the fashionable wardrobe.¹⁴



12. Jesus sandals

14. Walford, “History of Sandals.” LoveToKnow, LoveToKnow Corp, fashion-history. lovetoknow.com/fashion-accessories/history-sandals. (accessed on 12. May 2019)

Sport sandals, introduced in the 1990s, transcended the sandal into a foot covering suitable for a variety of sports activities by including a synthetic rubber-treaded sole.

This type of shoes have the same purpose as the boots, but they are made with less or no ankle support and for other weather conditions.

Sandals have other advantages than boots such as

- Air ventilation. They are perfect for a hike in a hot climate.
- Lightweight. Sandals are much lighter than boots and can be more comfortable for longer distances.
- Quick drying. Many hiking boots claim to be water repellent, but they still can absorb much water while crossing a river or watery trails, while sandals are quick drying and better ventilated.

Choosing the right sandals is essential for safety and comfort. Sandals equal to hiking boots need to fit correctly; the straps need to be a snug fit to keep your foot in position. Arch support needs to be right to avoid injuries. Choosing between open or closed toe sandals is also necessary depending on the trail. Closed toe shoes are protecting your toes from branches or rocks, but they may add some weight to the shoe. The sole needs to provide support and grip.¹⁵

There are plenty of models on the market that you can choose from today. None of which meets my design requirement. Now I feel pretty confident to say that I know how my hiking sandals should look like and I'm going to create my vision of a sandal for a stylish young person.



13. Hiking boot



14. Open toe sandal



15. Closed toe sandal

¹⁵. FireX. "5 Of the Best Sandals for Hiking - A Must Read Before Your Next Hike (2019)." The X Fire, 21 Apr. 2019, thexfire.com/best-sandals-for-hiking/, (accessed on 12. May 2019)

connection between materials and objects

Through my research on hiking boots and the materials they are made of, I found out that the materials and colors play a huge role in how we identify ourselves and what makes us buy one or another product.

From the beginning, my idea was to change people's views on such products as hiking boots. The range of designs that are on the market is not broad enough to cover the full spectrum of people who are possible marketing targets. From my observations, I conclude that the designs are never made to target young people into fashionable outdoor equipment, but more for middle-aged people who have hiking as their hobby. Because the functionality is often considered the first priority, while the design remains much the same.

I came to that conclusion after talking to the footwear developer from Mammüt Vincent Doenlen¹⁶. He told me that functionality is their top priority. They did develop a more youthful collection of outdoor clothing and hiking boots, but their customers were still choosing the classic design over an alternative suggestion.

The materials that we choose as a designer for the hiking shoe are making a statement for the people who will buy them. Natural materials have a different message than synthetics, and people who buy one shoe or another are standing behind the statement that the designer has made.

Our product choice also represents ourselves and our beliefs. For example, if person A is vegan, they would never consider buying a full leather shoe. Person B cares about the branding of a boot and chooses the more expensive model, believing that expensive is better. Someone would like to support a smaller company and invest in a business that they believe in; someone goes to the nearest store and purchase a pair of boots.

16. 15. Februar 2019 in Headquarter Mammüt, Seon

connection to the practical work

Writing this essay gave me an understanding of what my shoe design should look like. With my vision, I want to make a statement, to make people rethink classic design looks. I wish that there would be more design brands that dare to risk and not only be innovative in a functional field but also as a fashion statement.

Fast fashion brands are using utility clothing design and hiking boots in their collections since 2018. That means that people are interested in integrating outdoor clothing into their every day lives.

Finding out about the background on sports and fashion gave me a push to make my design bold and let it speak for itself. The sportswear campaigns should show a younger audience that anyone could achieve their goals and have a place on a pedestal instead of pushing the boundaries of sexualised advertisements. For me, sportswear isn't about clothing designed for sports activities, but also a cult and a community that so many people are a part of.

At the beginning of my research, I was sure that my product would be hiking boots, but through the process I got hooked up on the hiking sandal idea.

Hiking sandals have the same problem I believe as hiking boots, and it's the lack of design and options. They all have the same straps in the same position, and the colors are muted with a bit of a pattern on the straps. That's why I chose to go in that direction and change my path.

In the practical work, you can see that I made the change pretty quickly because while making first prototypes I found it more interesting to explore hiking sandals. From the beginning, I was more interested in a summer version of hiking boots and through the essay it was reasonable for me to switch.

The primary color for the shoes and the whole concept is neon yellow. This color has been trending in 2019 and I chose it because it's bold, fun and attention-grabbing.

The bright yellow-green color was named after a French liqueur called "chartreuse" which has a greenish-yellow hue.

The tertiary color yellow-green is most commonly perceived to be a new and vibrant shade, evoking feelings of joy and cheeriness. Chartreuse represents enthusiasm, happiness, nature, growth, and youth. Like standard green, chartreuse is associated with the liveliness and the blossoming of spring. However, in contrast, it can also stand for sickness, jealousy, and cowardice.¹⁷

Chartreuse can be both earthy and electric. It looks terrific with reds, oranges and blues, especially turquoise and cobalt. It makes a high contrast with charcoal black and as an accent with pastel colors.

I think the combination of pastel colors with bright neons looks excellent and works in fashion and interior design. The color radiates confidence and power and those are characteristics that I want my design to have.

17. "Week 2: Explore Yellow-Green and Pigment Origins | Color Column - Nix Sensor Ltd." Nix Sensor Ltd, 1 Aug. 2018, www.nixsensor.com/color-column-yellow-green-chartreuse/. (accessed on 12. May 2019)

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