



**MONARCH**

**WOMEN'S OUTDOOR BASKETBALL FOOTWEAR AND APPAREL**

**EMILY GUERRA  
UO THESIS 2022**



## EMILY GUERRA

**MY PASSION AS A SPORTS PRODUCT INNOVATOR IS TO DESIGN SOLUTIONS THAT MAXIMIZE ATHLETE PERFORMANCE AND HEALTH WHILE CHALLENGING THE STATUS QUO FOR THE FUTURE OF FOOTWEAR AND APPAREL.**

Having experience in sport and rehabilitation has allowed me to witness first-hand the inequalities in men's and women's sports all the way up to the college level not only in opportunity but product as well. Being a female athlete has taught me a lot about teamwork and how to push oneself to challenge limitations.



1893

Women have been playing basketball outdoors for over 100 years.

415,576

The number of high school and college level female basketball athletes during the 2018-19 season according to the NCAA.

500

Approx. number of outdoor courts across NYC's 5 boroughs.

WHY ARE THERE FEW

OUTDOOR BASKETBALL

WOMEN'S

FOOTWEAR AND APPAREL OPTIONS





## WEATHER VARIATIONS

HEAT AND RAIN BECOME FACTORS PLAYERS  
NEED TO WATCH OUT FOR



## VARYING SURFACES

COURTS MAY VARY BETWEEN SLICK AND ROUGH  
SURFACE TRACTION



## UNEVEN SURFACES

SURFACE IMPERFECTIONS CAN DIFFER BETWEEN  
BASE LINES



An aerial, top-down view of an outdoor basketball court. The court is marked with white lines on a dark surface, showing the key, three-point arc, and center circle. Several basketball hoop structures are visible around the perimeter. Numerous players are scattered across the court, some appearing to be in motion. The overall scene is captured in a dark, monochromatic style with a light blue horizontal line at the bottom.

**CURRENT FOOTWEAR AND APPAREL OPTIONS WORN BY FEMALE ATHLETES ARE NOT DESIGNED FOR THE OUTDOOR ENVIRONMENT AND DO NOT ADEQUATELY ADDRESS THESE FACTORS**



# ATHLETE



TYPE OF SHOE

- HIGH TOP
- MID TOP
- LOW TOP



WHAT ADDITIONAL EQUIPMENT DO YOU WEAR?

- KNEE PADS/SLEEVE
- SHOOTING SLEEVE
- ANKLE BRACES

## ARE DIFFERENT SHOES NECESSARY FOR OUTDOOR BASKETBALL?

"Never wear your indoor shoes outdoors because you will wreck the indoor floor and your shoes."

"Yes because the bottoms would get worn out much quicker on a concrete or pavement surface than indoors, also for indoors they need to stick to the ground well and not be slippery."

"Yes, for the different surfaces of the ground."

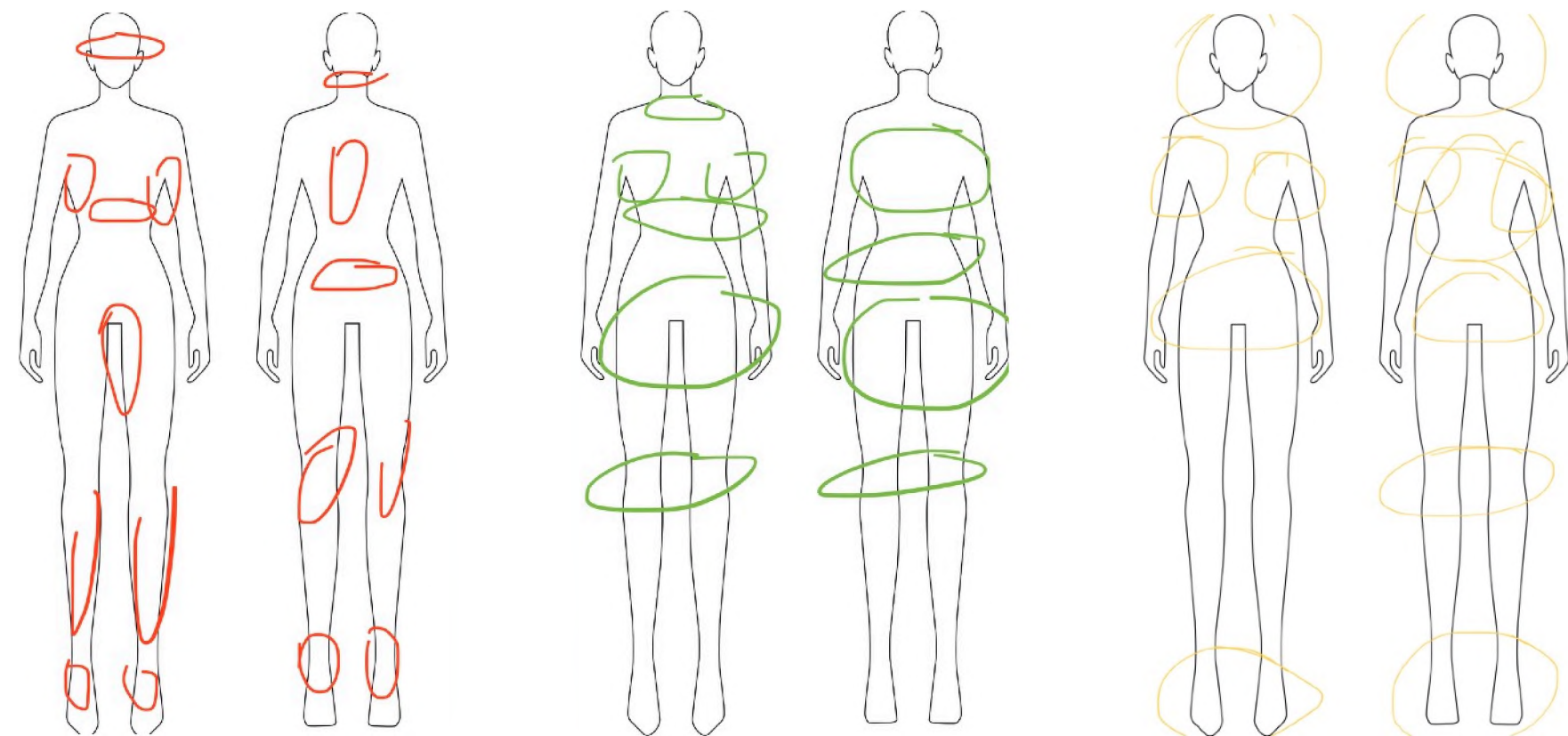
"Not really. I wear running sneakers if I'm outdoors so I dont ruin my pair of basketball sneakers."

"Outdoor shoes need to be more durable and more cushioned."

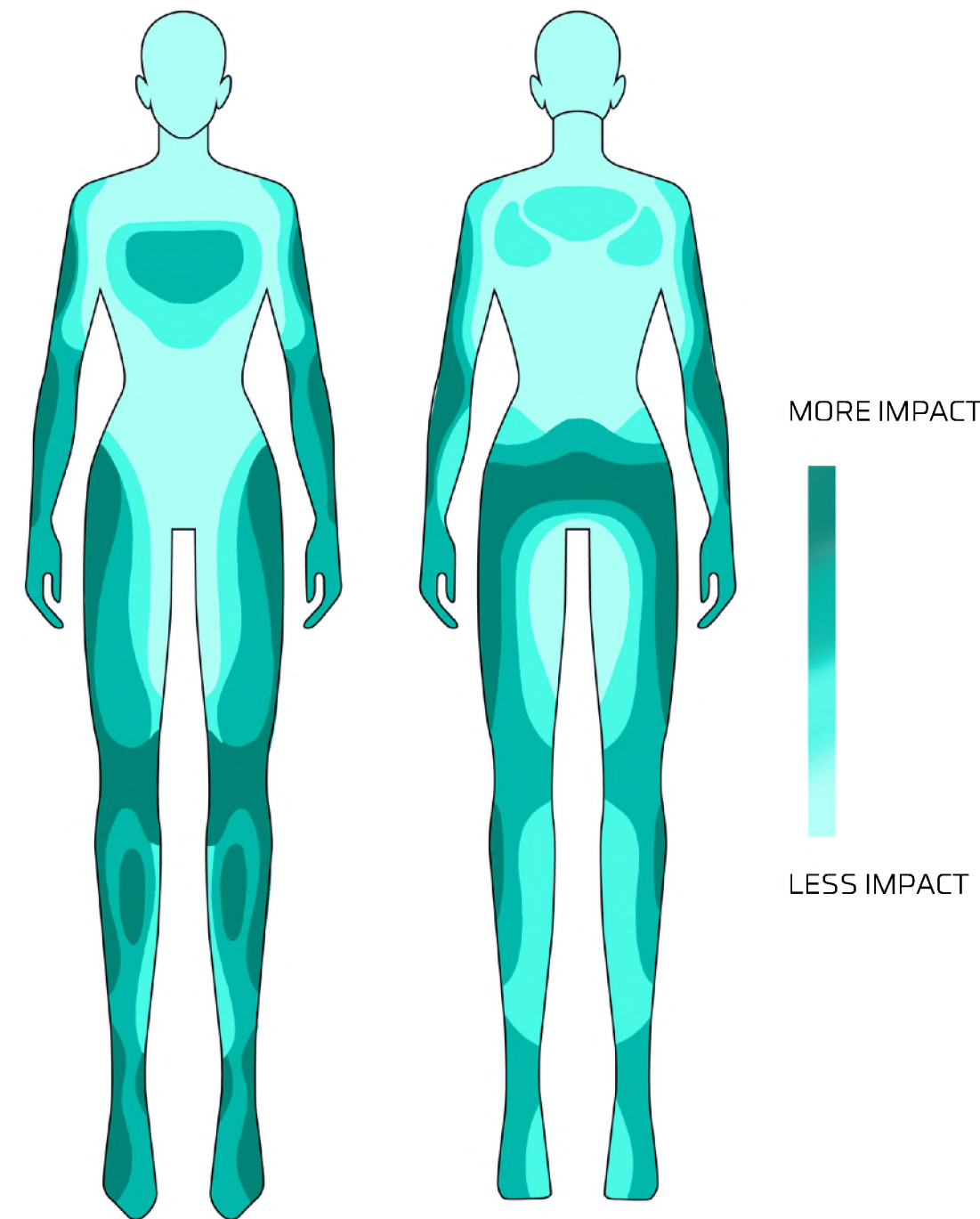
“ THE COURT, ENERGY, GAME ...EVERYTHING JUST FEELS DIFFERENT ”



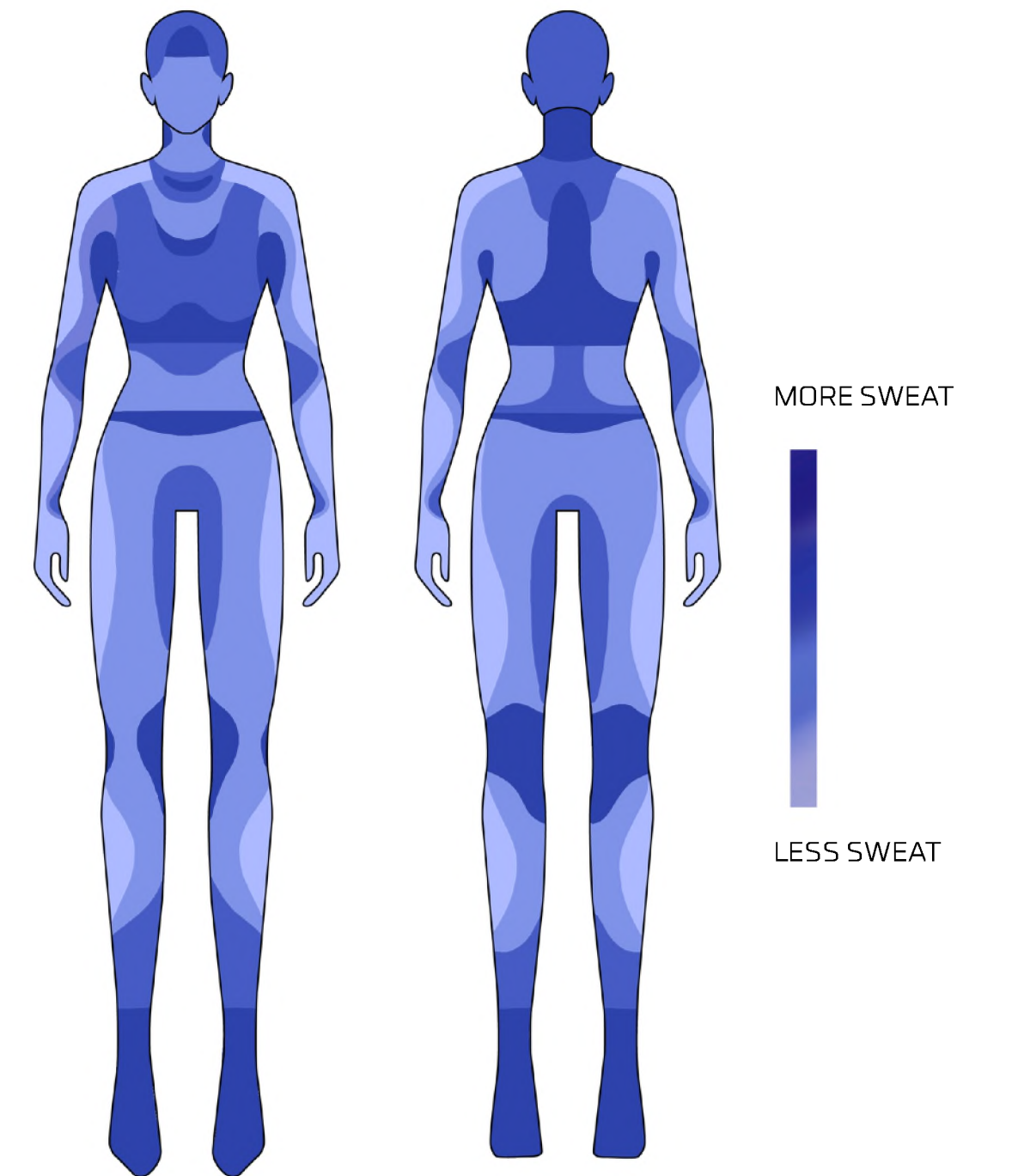
# APPAREL RESEARCH



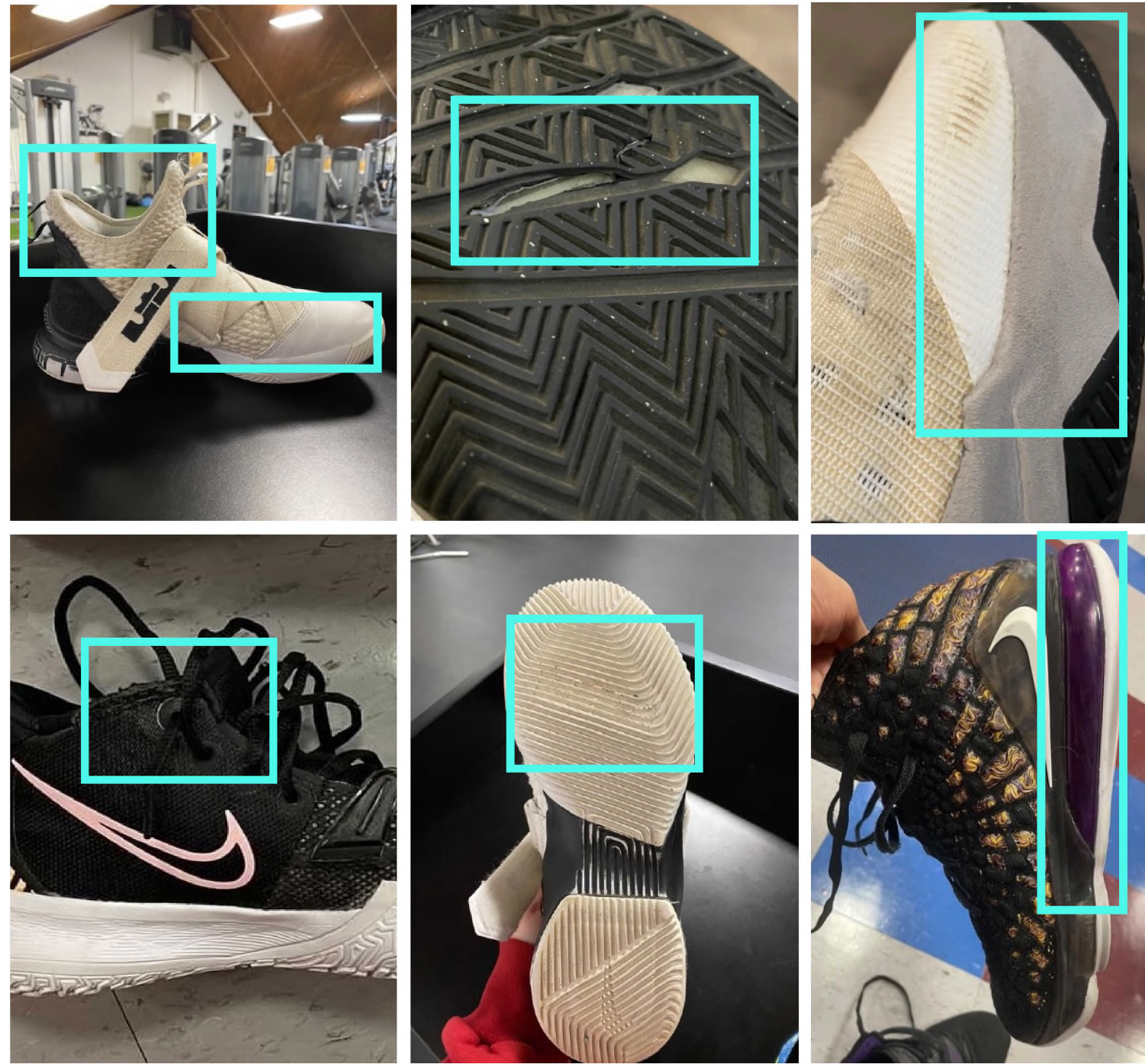
IMPACT MAP



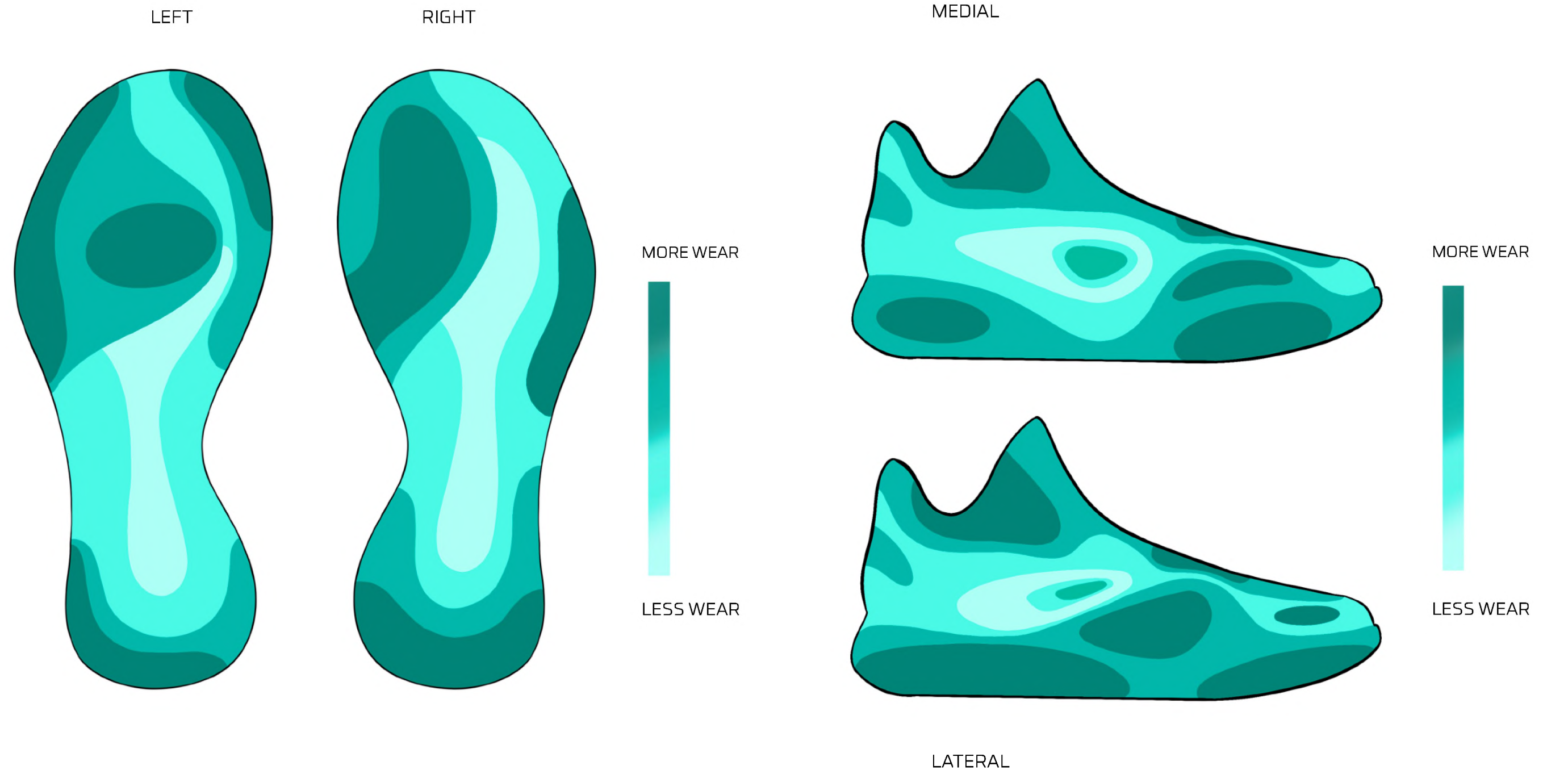
SWEAT MAP



# FOOTWEAR RESEARCH



## WEAR PATTERN MAP





A black and white photograph of a basketball hoop and backboard mounted on a brick wall. The backboard is perforated and has a smaller solid square in the center. The hoop is in the foreground, and the brick wall is the background. The lighting creates strong shadows on the wall.

**HOW MIGHT WE PROVIDE DURABLE AND FLEXIBLE PROTECTION  
FOR FEMALE BASKETBALL ATHLETES DESIGNED TO HELP THEM  
PLAY THEIR BEST GAME?**





FIT

ZONED LOCKDOWN



MOBILITY

EASE OF MOTION



DURABILITY

MATERIAL APPLICATION

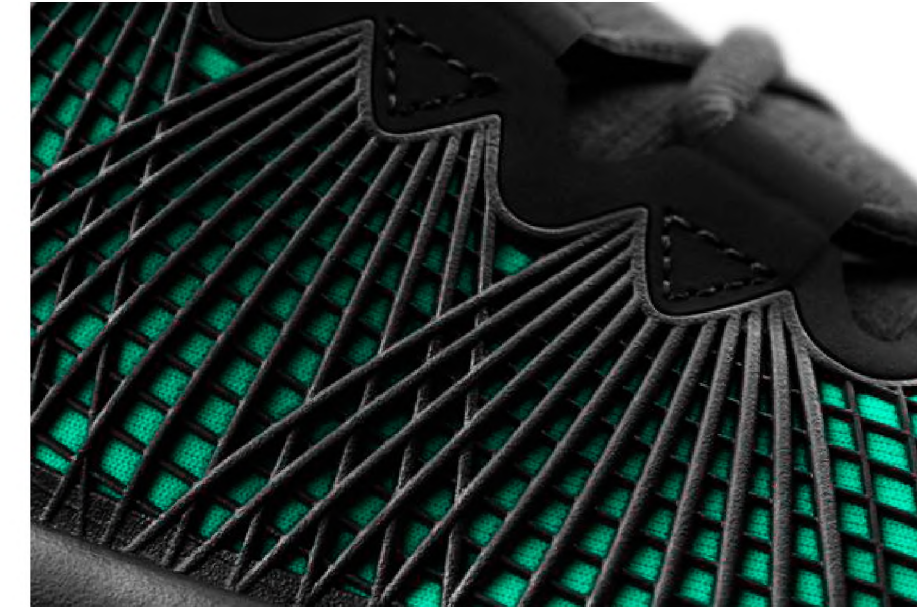




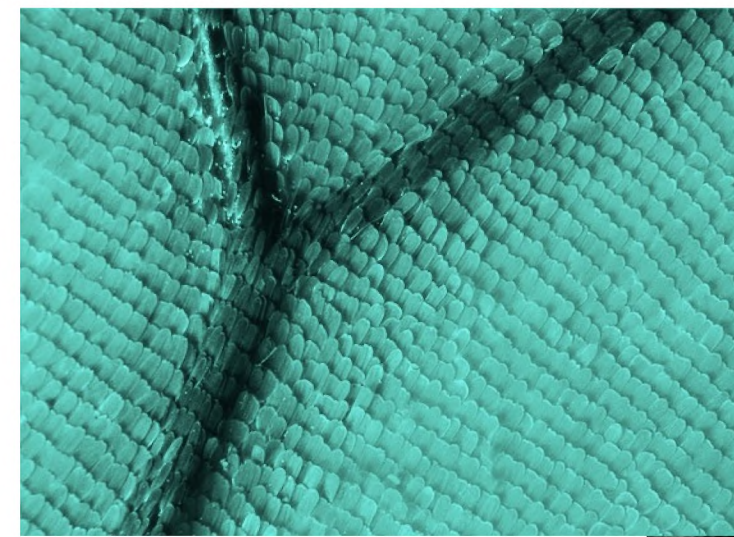
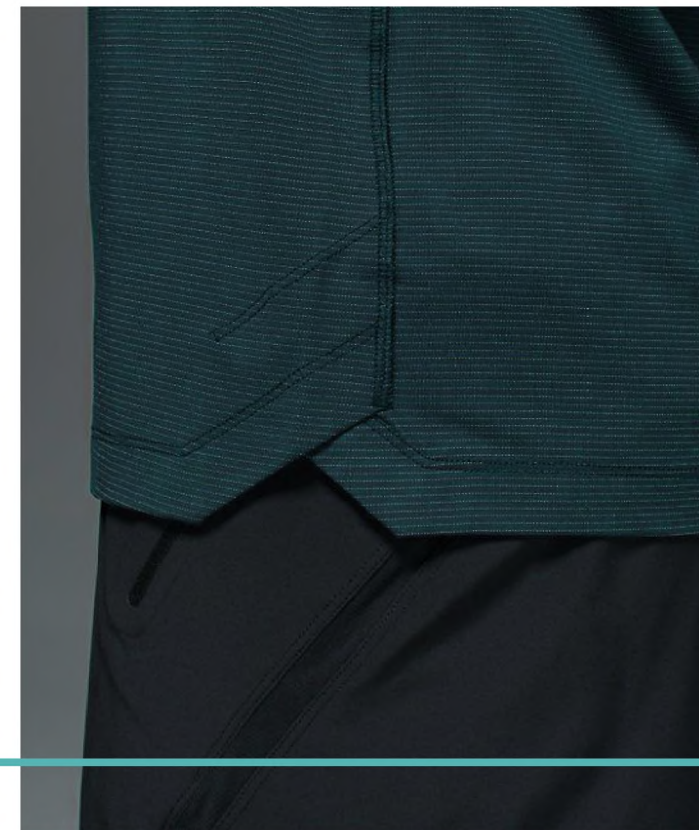
## DURABILITY



## FIT / LOCKDOWN



## MOBILITY

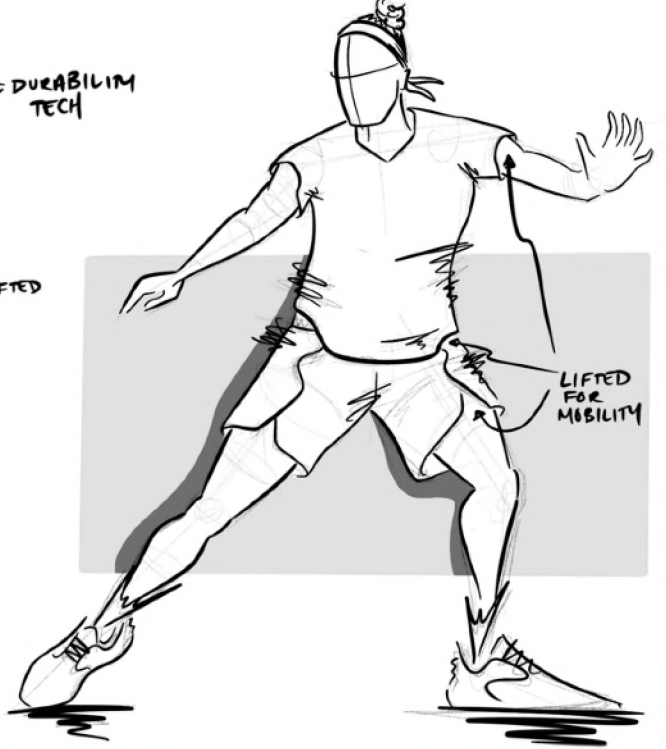
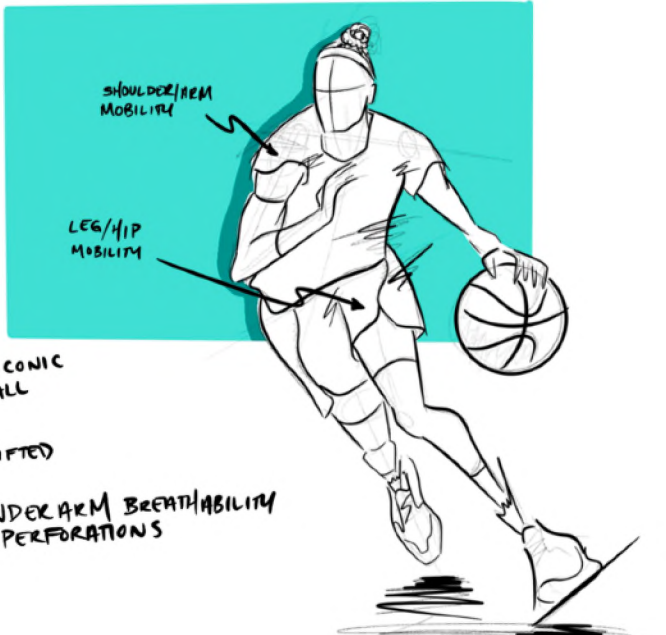
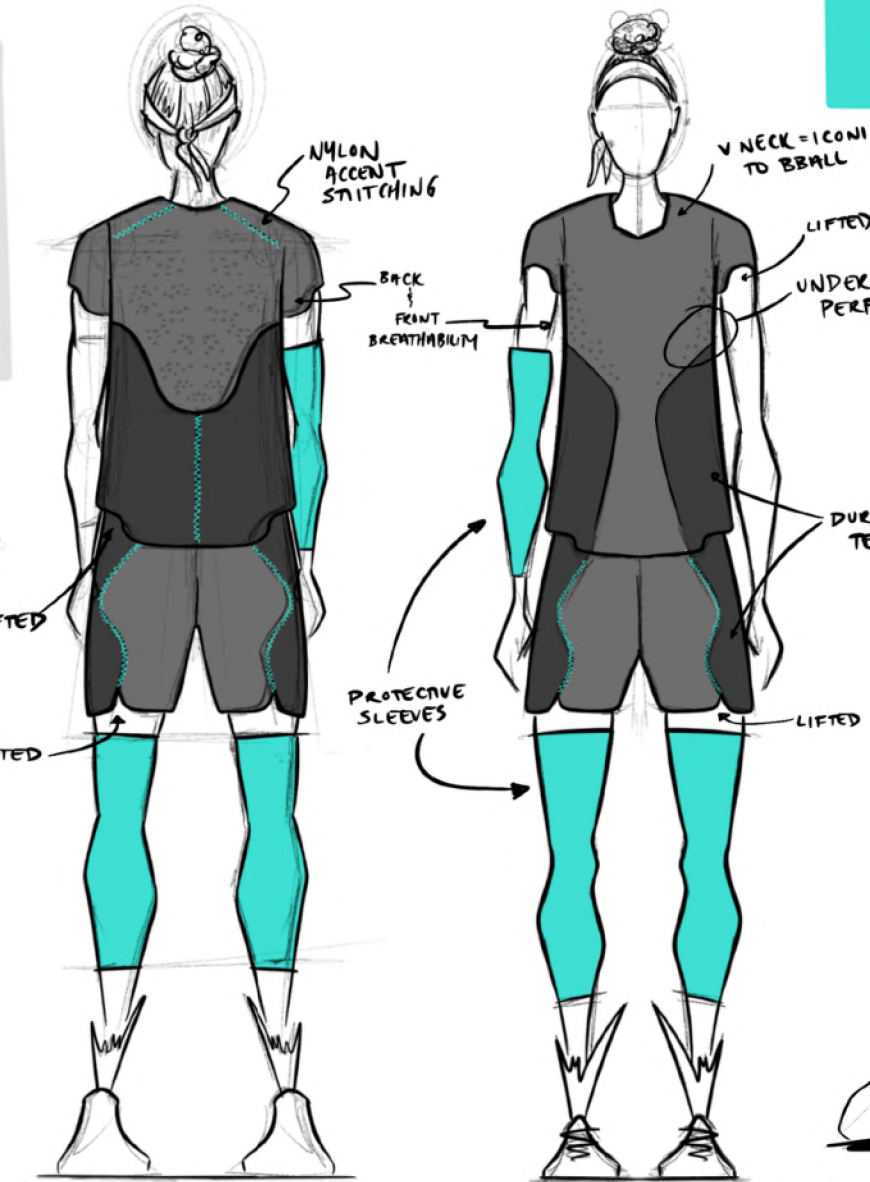
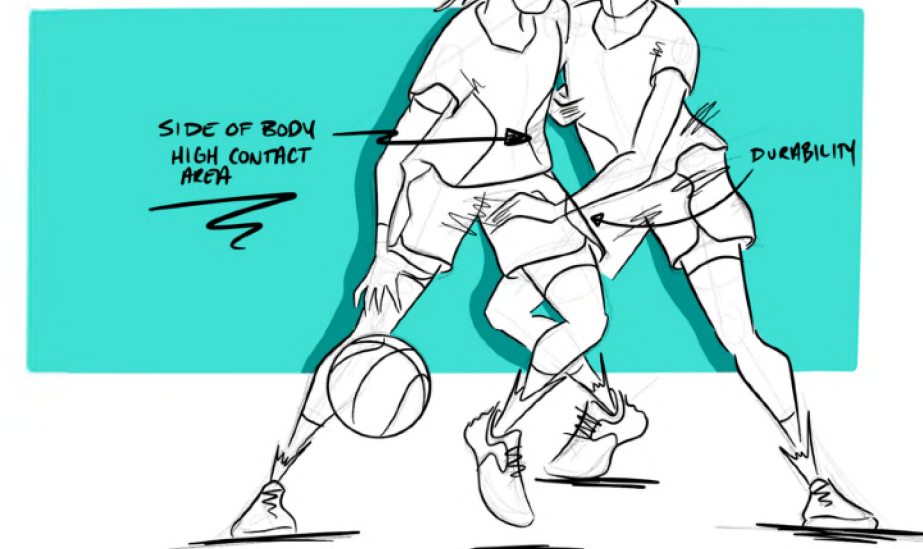
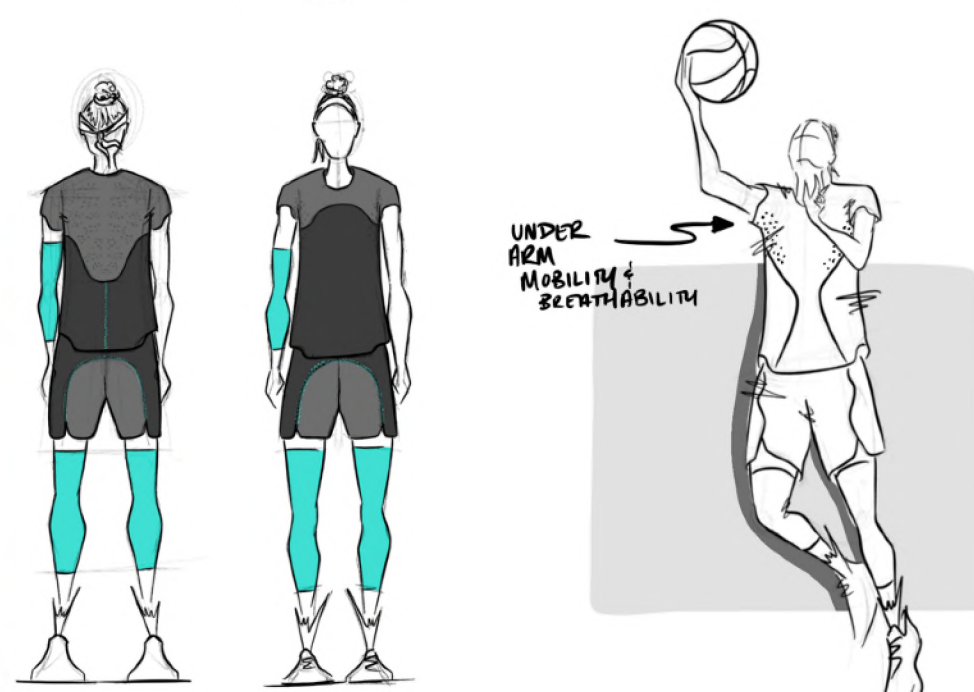
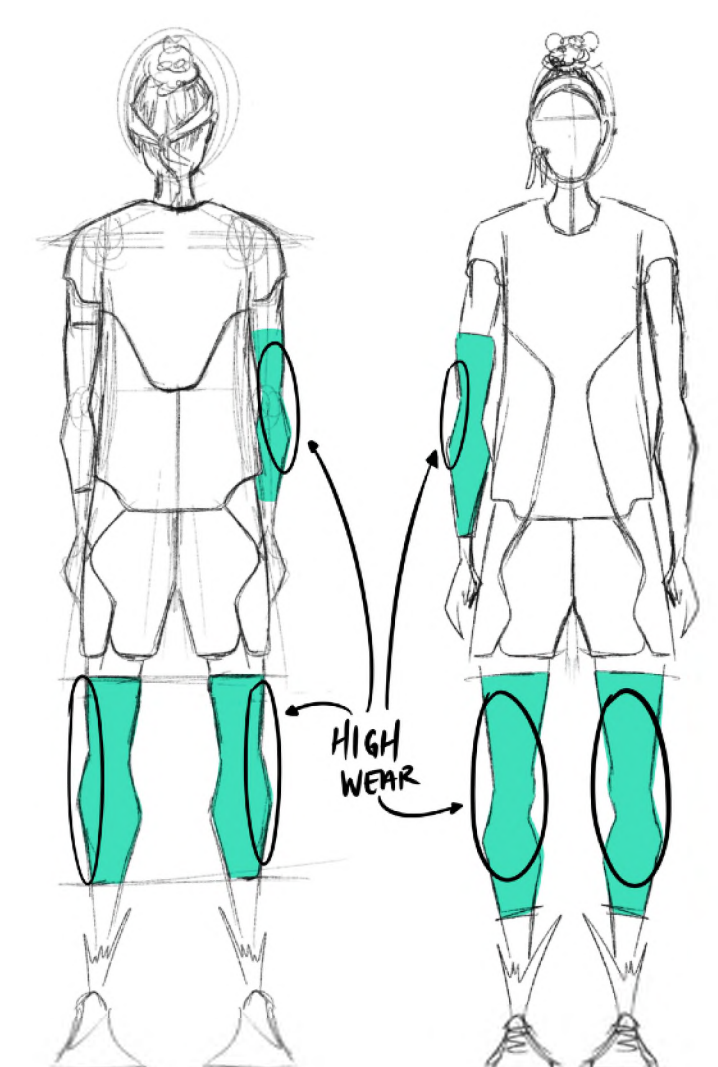
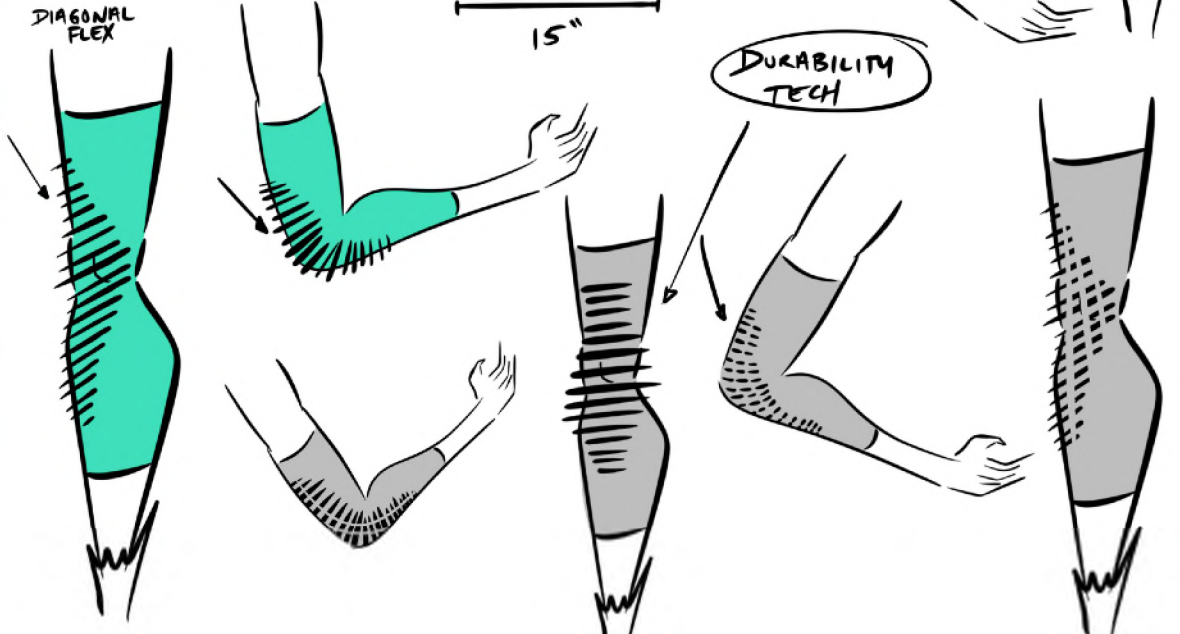
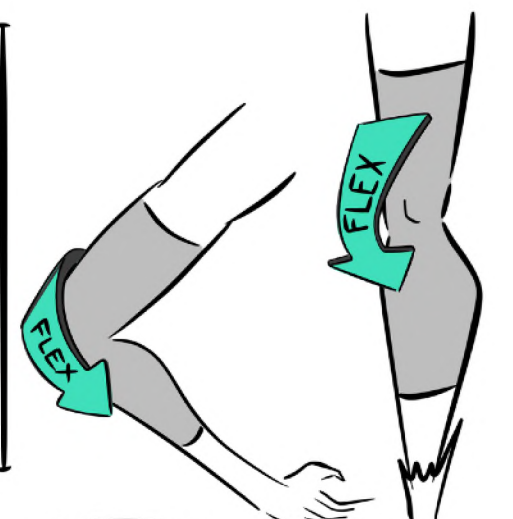
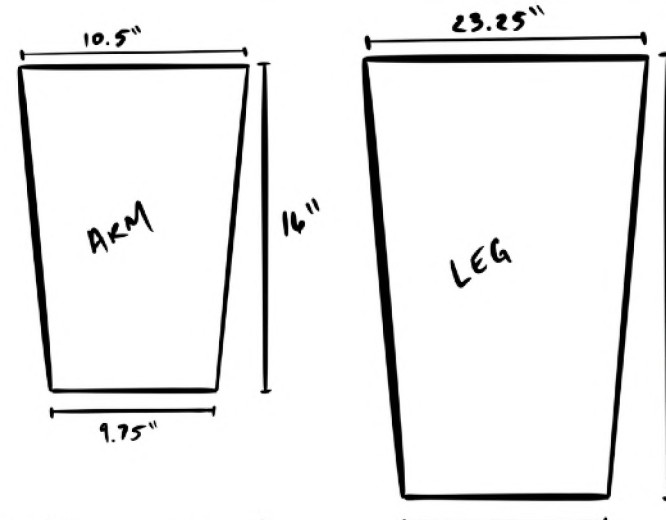
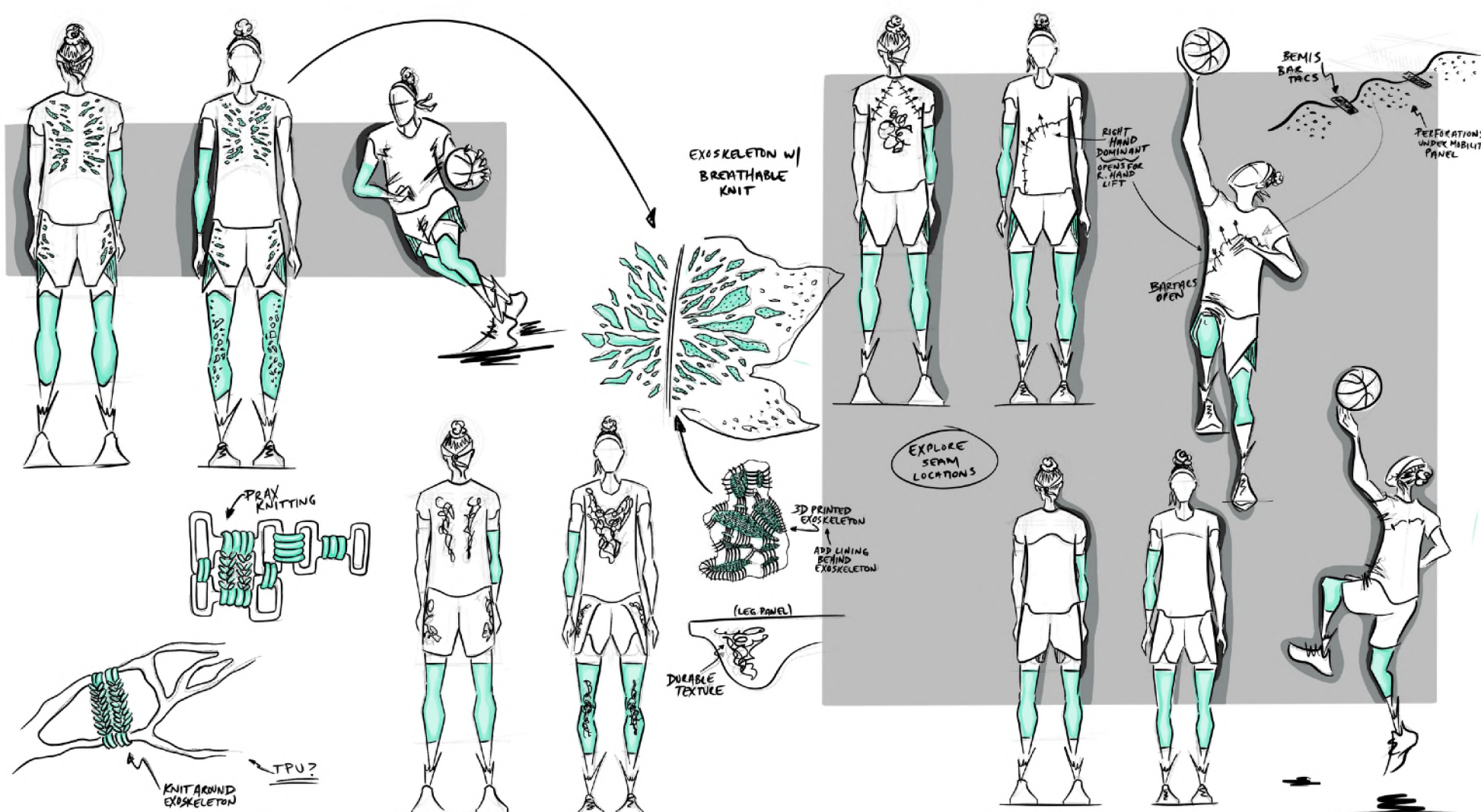
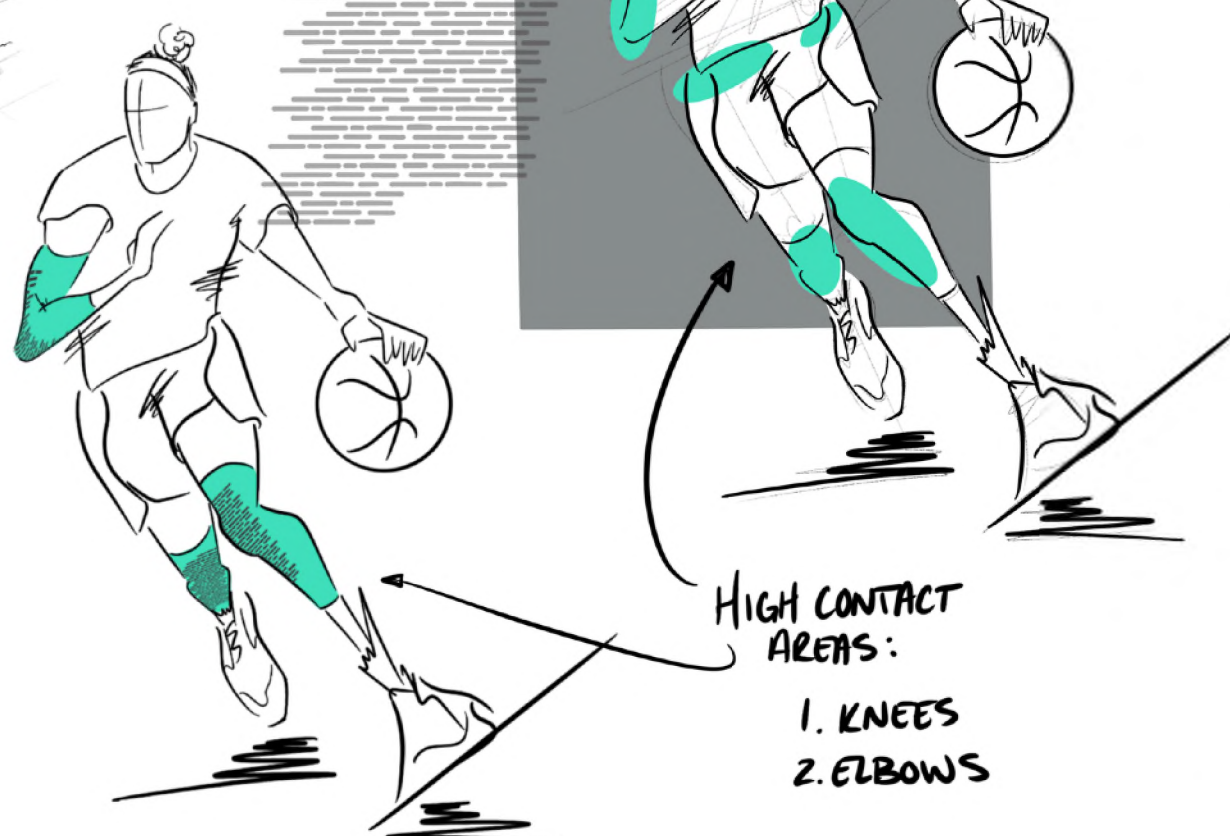
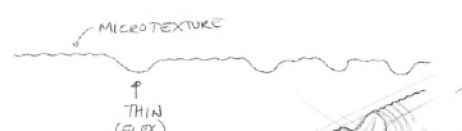
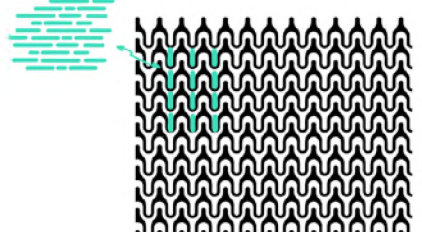


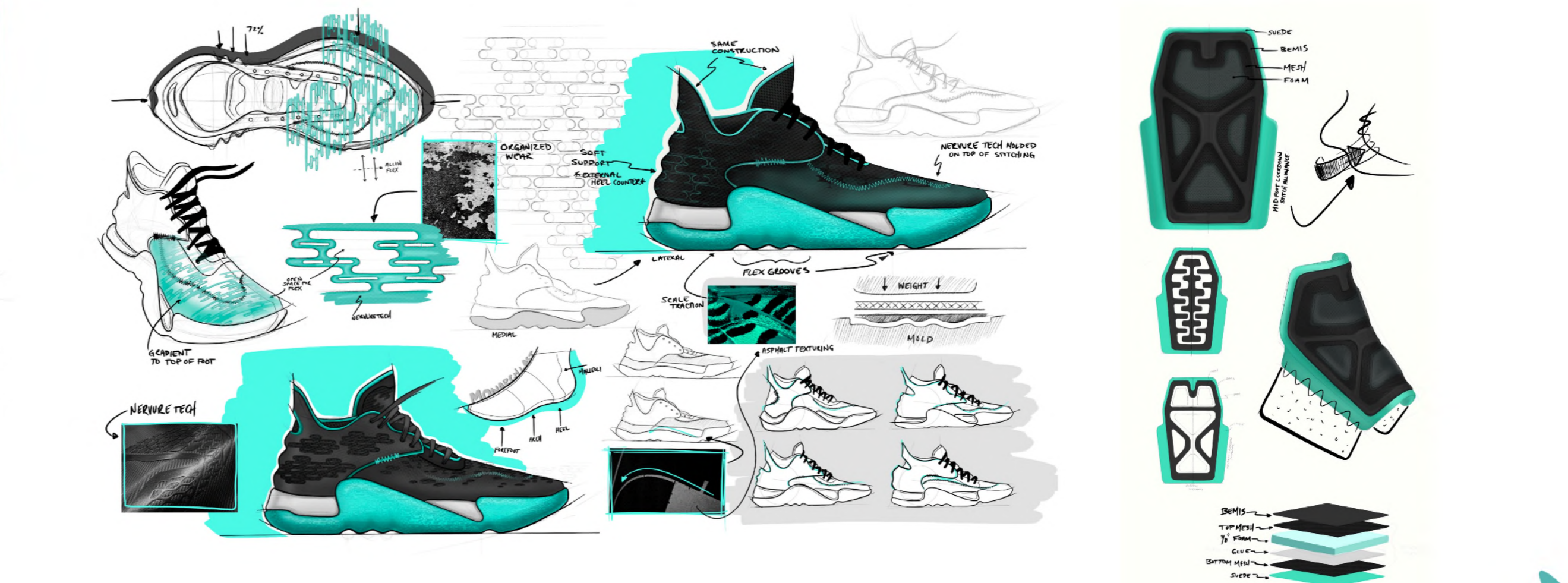
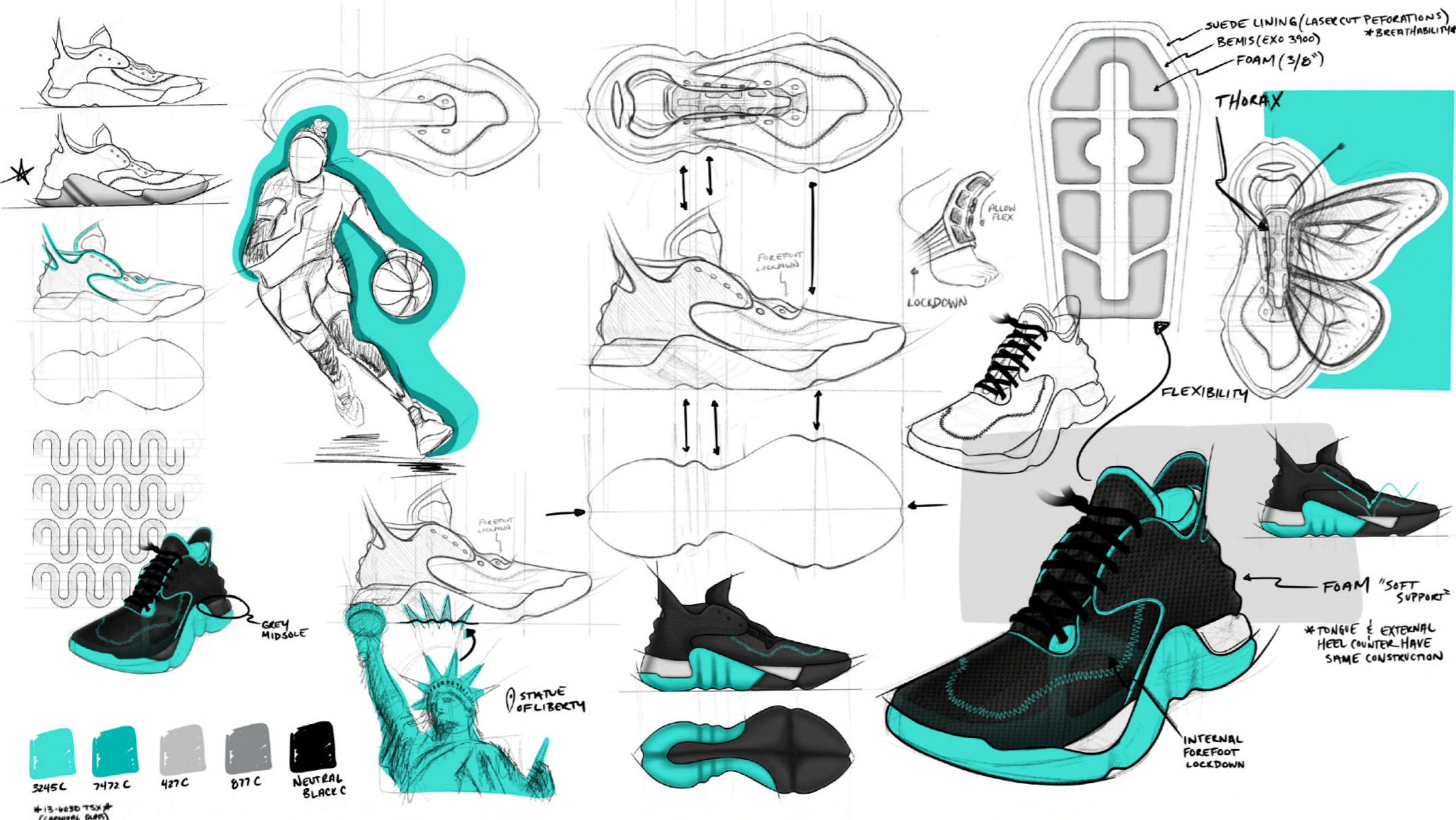
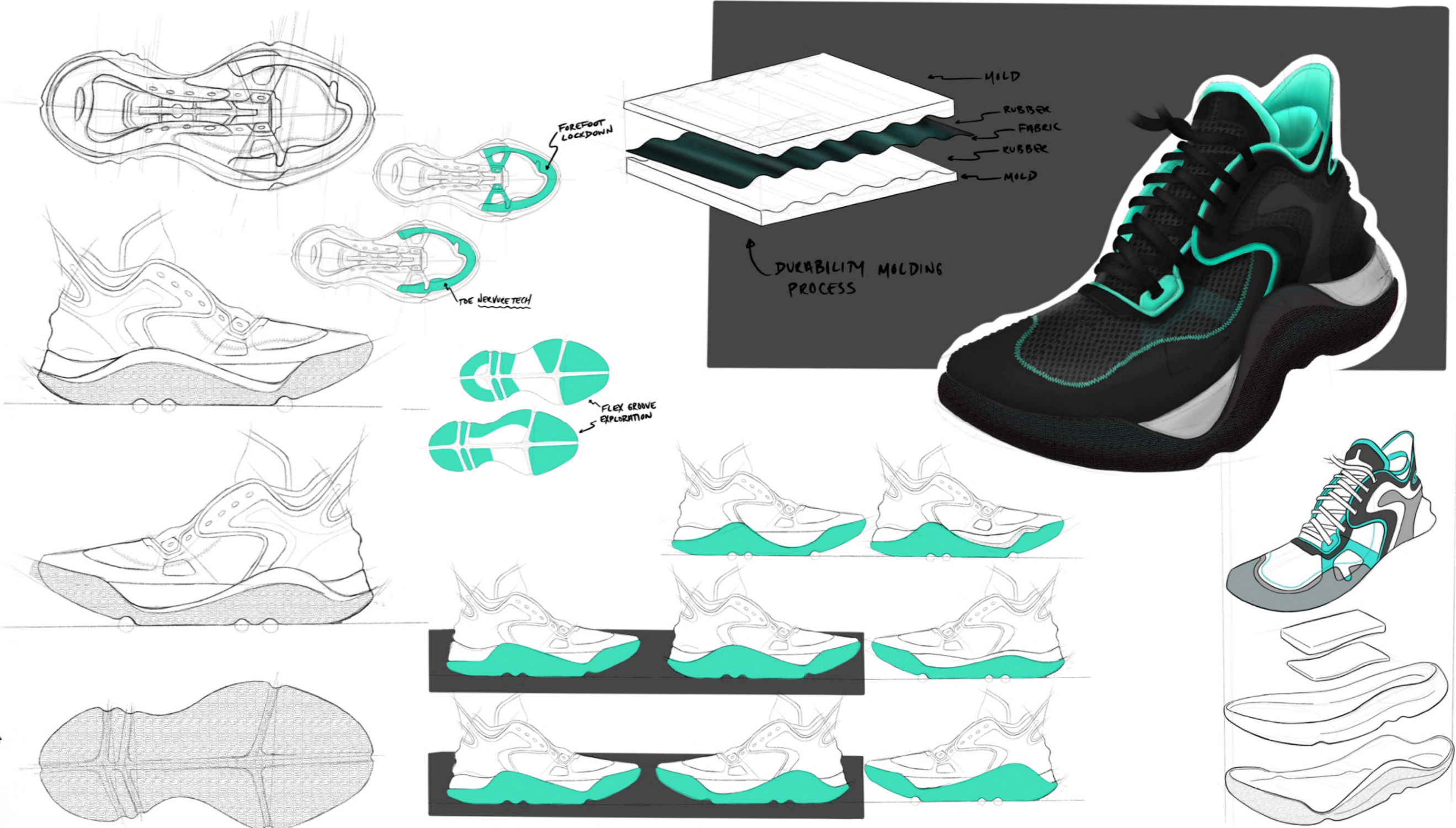
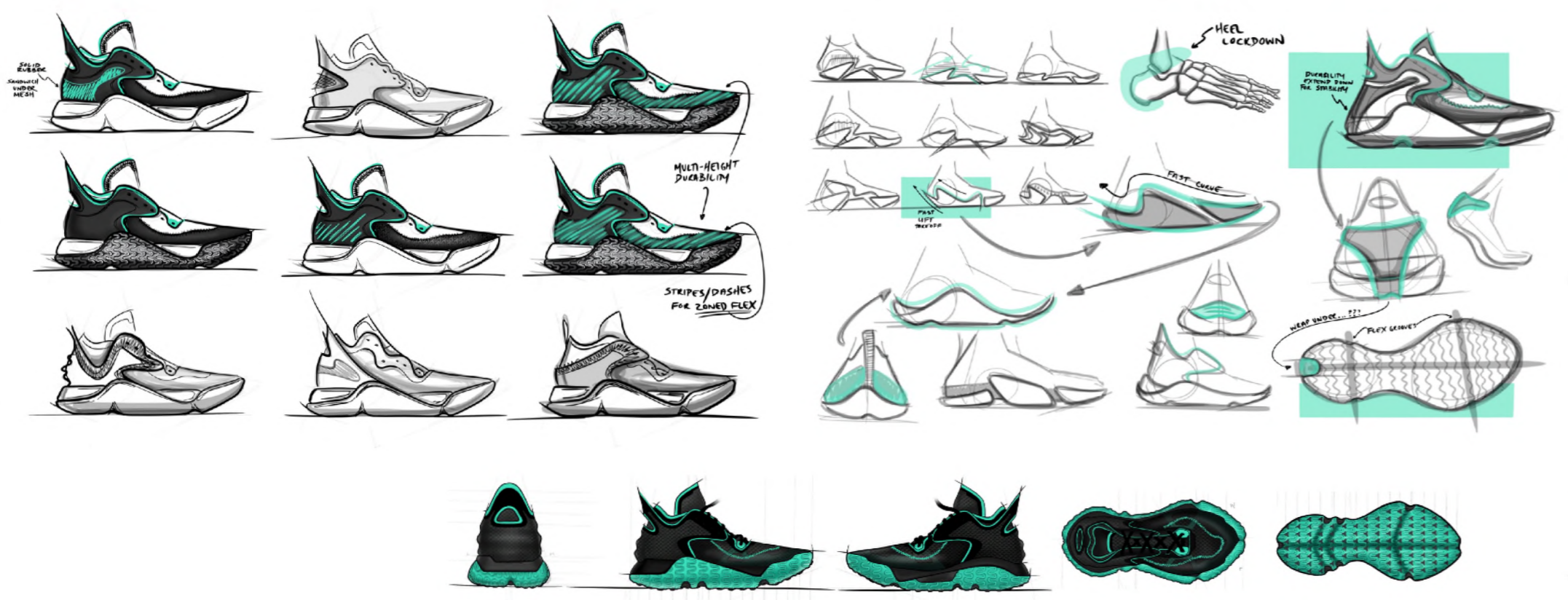
PANTONE NEUTRAL BLACK C    PANTONE 877 C    PANTONE 437 C    PANTONE 7472 C    PANTONE 5345 C





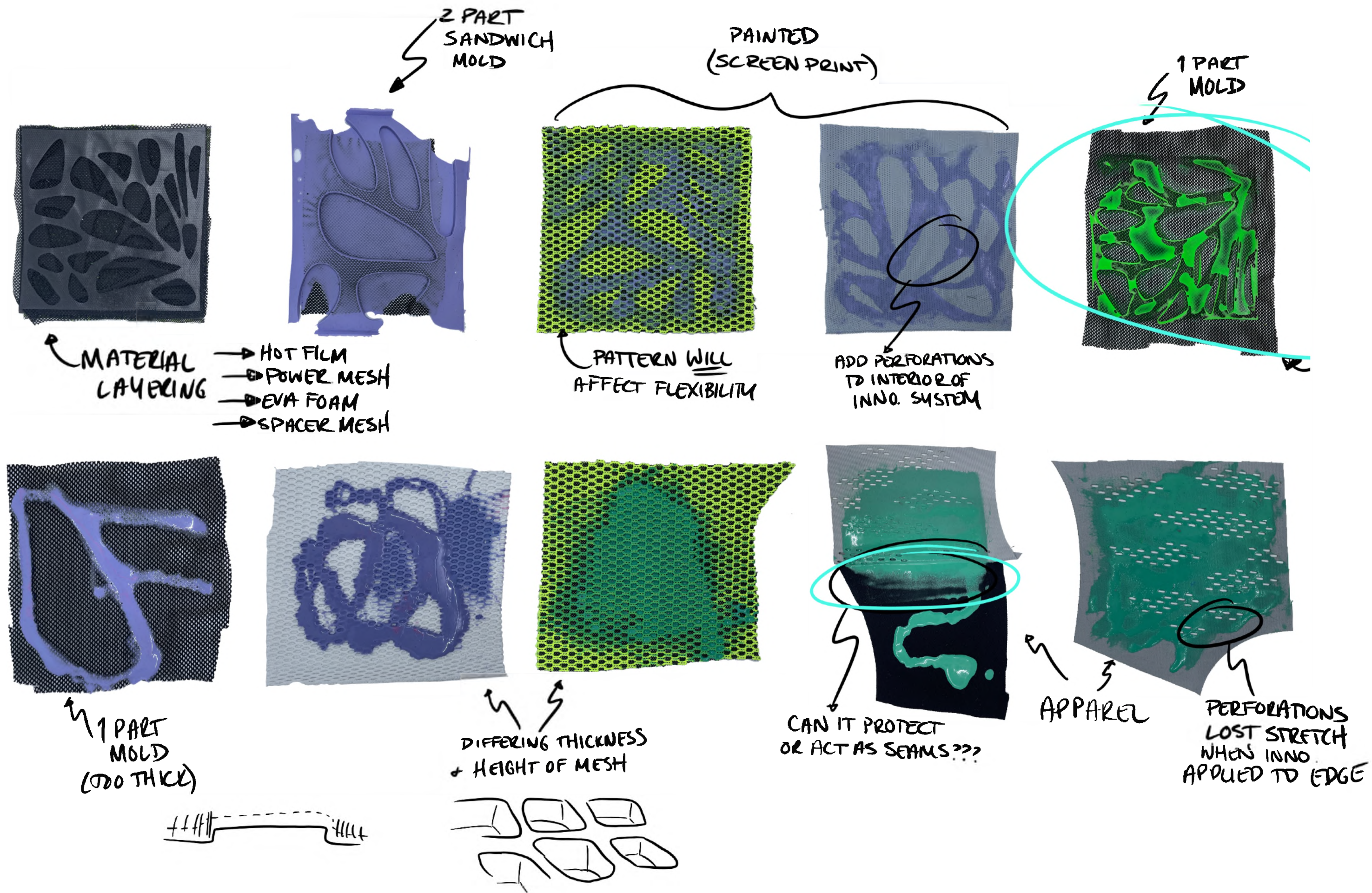
DURABILITY TEXTURE = NEGATIVE OF TRACTION PATTERN







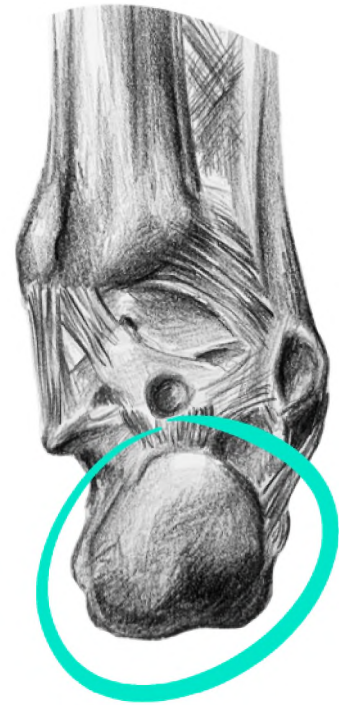
# DURABILITY PROCESS



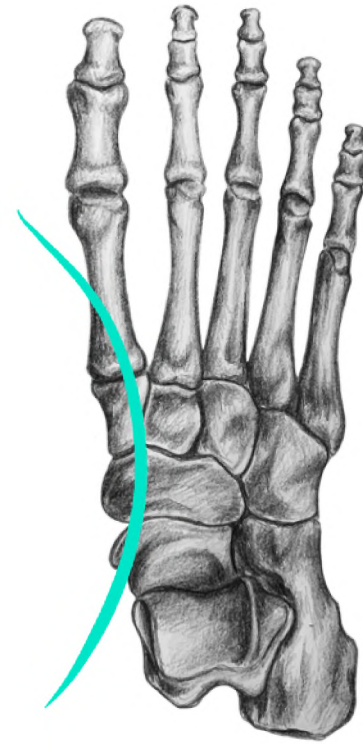




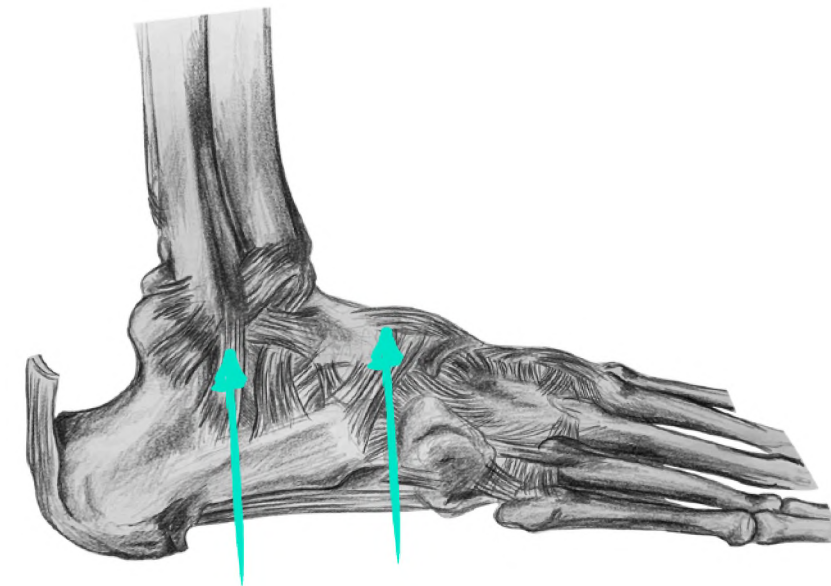
# MONARCH LAST



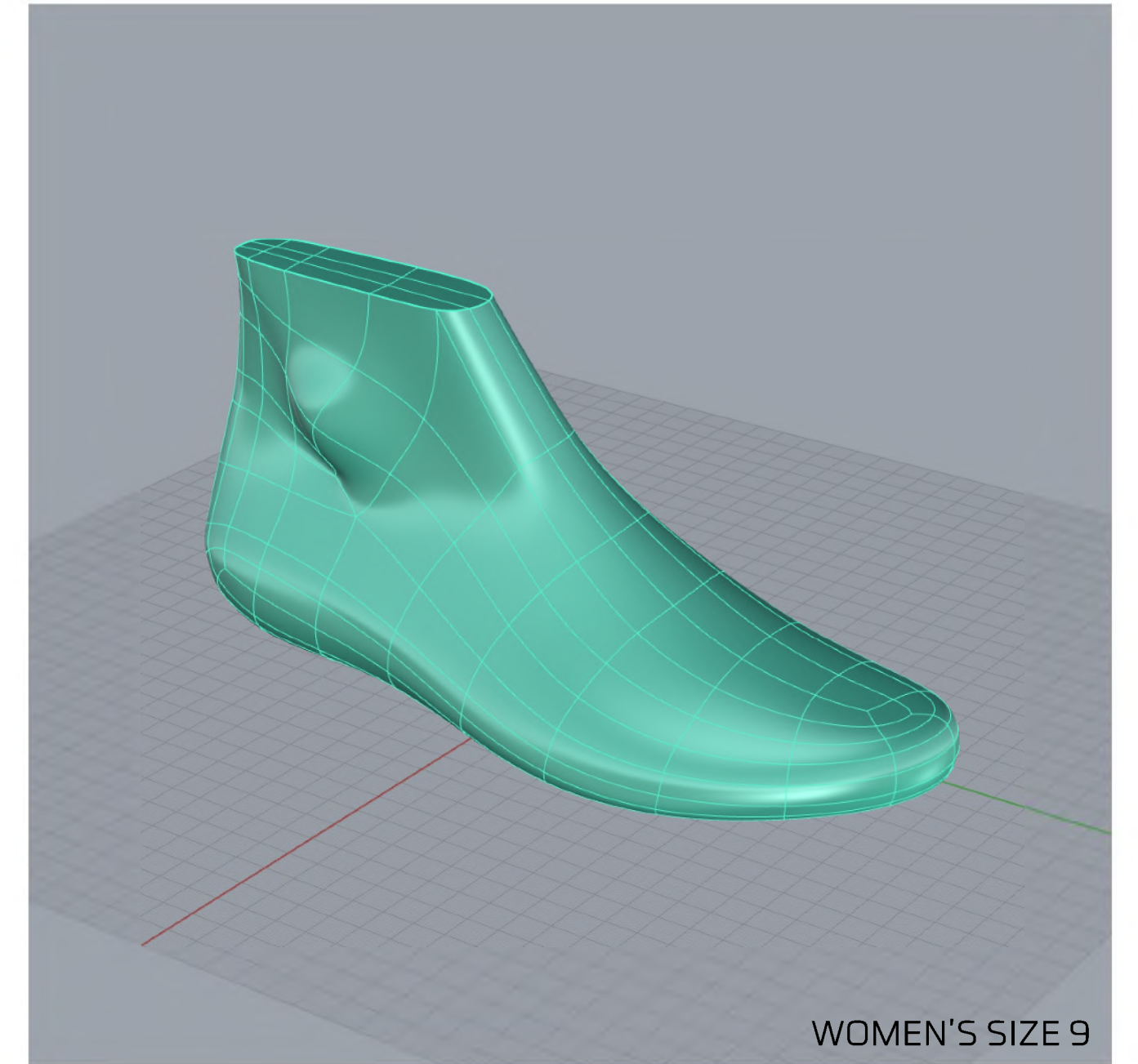
**NARROWER HEEL  
LOWER MALLEOLI HEIGHT**



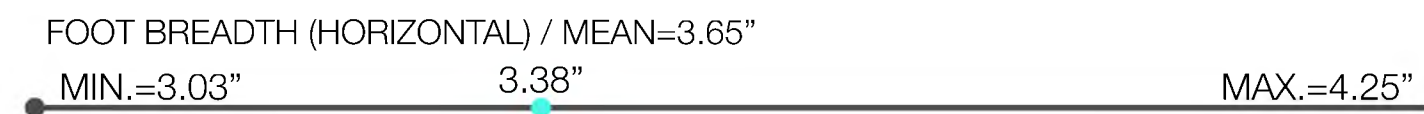
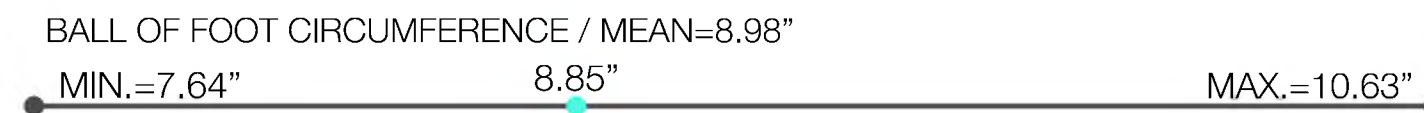
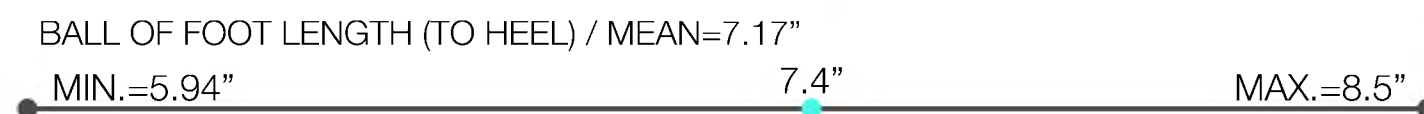
**NARROWER FOREFOOT  
SHORTER 5TH MET. TO HEEL LENGTH**



**LOWER MIDFOOT HEIGHT  
HIGHER/SENSITIVE ARCH**



WOMEN'S SIZE 9

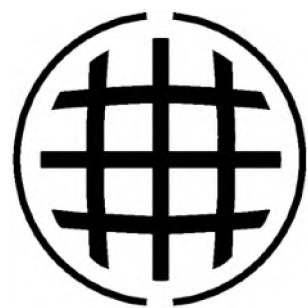




# APPAREL TESTING



**FIT**  
SEAM LOCATIONS



**MOBILITY**  
MATERIAL CUT AWAYS



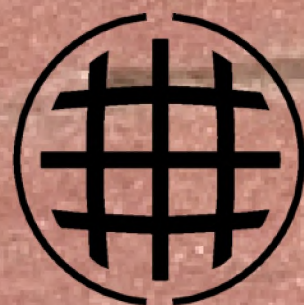
**DURABILITY**  
TEXTILE FOCUSED



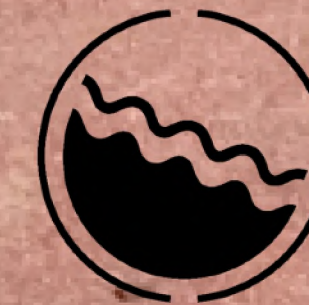
# FOOTWEAR TESTING



**FIT**  
ZONED LOCKDOWN



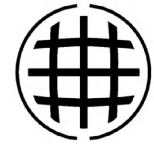
**MOBILITY**  
UNDERFOOT FLEXIBILITY



**DURABILITY**  
TEXTILE FOCUSED



# APPAREL



## FLEXIBILITY

CUT AWAYS AT ANTERIOR ARM TO ALLOW FOR OVERHEAD/FORWARD MOBILITY

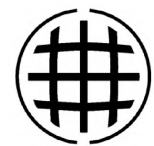
## THERMOREGULATION

BACK AND UNDER-ARM PERFORATIONS FOR DIRECT AIR FLOW TO THE SKIN



## DURABILITY TECH (ARM)

SEPARATED TO ALLOW FOR JOINT FLEXIBILITY



## FLEXIBILITY

CUT AWAYS AT HIP TO ALLOW FOR HIP/LEG MOBILITY



## FIT

ELASTIC WAISTBAND ON EXTERIOR FOR COMFORT

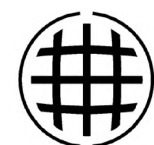
## THERMOREGULATION

MOISTURE-WICKING KNIT FOR COMFORT AND BREATHABILITY



## FIT

SEAM LOCATIONS AND PATTERNS DESIGNED AROUND BODY AND MOTION



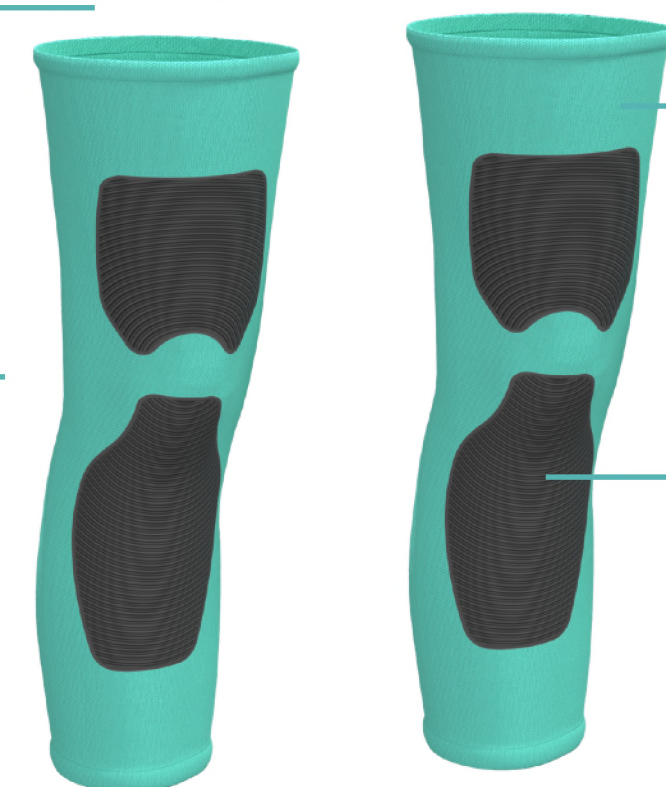
## FLEXIBILITY

3" CUT AWAYS AT ANTERIOR QUAD TO ALLOW FOR HIP/LEG MOBILITY



## DURABILITY TECH

SEPARATED TO ALLOW FOR JOINT FLEXIBILITY



100% POLYESTER KNIT

EXO 3900 BEMIS

100% POLYESTER KNIT

DURABILITY TECH

100% POLYESTER KNIT

TECH PATCH / 100% NYLON THREAD

2" ELASTIC WAISTBAND

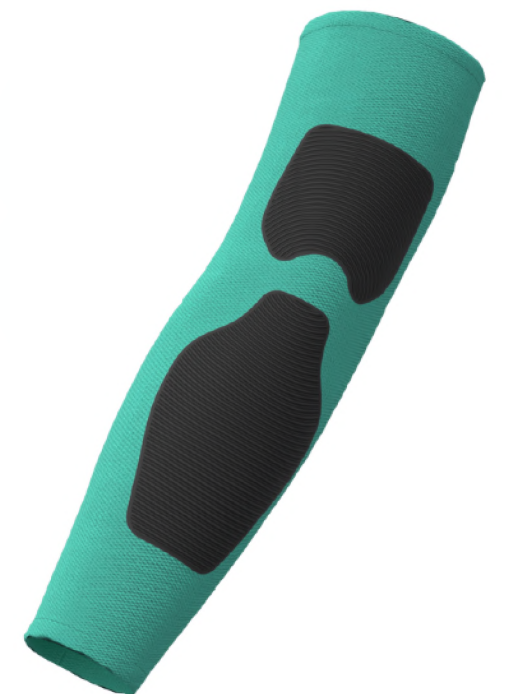
100% POLYESTER KNIT

100% NYLON THREAD

EXO 3900 BEMIS

100% POLYESTER KNIT

DURABILITY TECH



# FOOTWEAR



## BREATHABILITY

THIN MESH TONGUE TO ALLOW FOR HEAT LOSS

## LOCKDOWN

3 POINTS OF LOCK DOWN LOCATED IN THE FOREFOOT, MIDFOOT, AND HEEL

## BREATHABILITY

MESH VAMP TO ALLOW FOR HEAT LOSS



## DURABILITY TECH

LOCATED ON FOREFOOT MEDIAL AND LATERAL SIDES AND AROUND HEEL  
\* ADDITIONAL BENEFIT- PROVIDES STABILITY

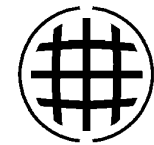


## LOCKDOWN

HEEL COUNTER MOLDED AROUND MONARCH FEMALE LAST

## STABILITY

TORQUE SHANK IN MIDFOOT OF MIDSOLE



## FLEXIBILITY GROOVES

LOCATED UNDER FOREFOOT AND AT HEEL (APPROX. 75% FROM TIP OF SOLE)

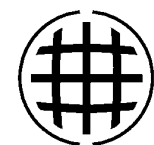


## DURABILITY

HIGH WRAP OUTSOLE FOR EXTRA PROTECTION DURING EXTREME MOVEMENTS

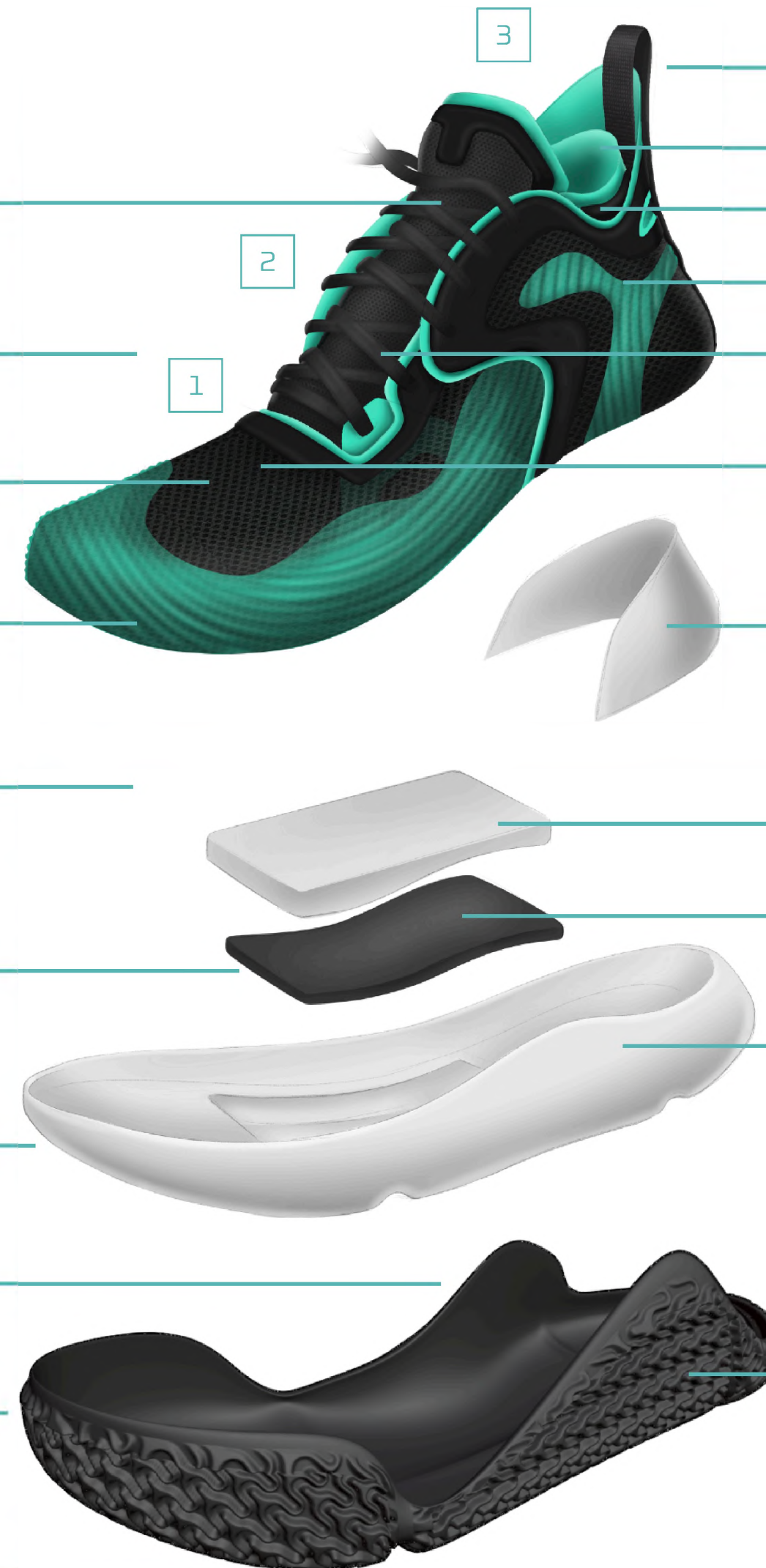
## TRACTION

STUD-HERRINGBONE TRACTION PATTERN DESIGNED FOR OUTDOOR COURTS



## FLEXIBILITY GROOVES

LOCATED UNDER FOREFOOT AND AT HEEL (APPROX. 75% FROM TIP OF SOLE)



100% POLYESTER 0.75" WEBBING

100% POLYESTER SUEDE

0.375" OPEN CELL FOAM

EXO 3900 BEMIS

100% POLYESTER KNIT

100% POLYESTER MESH

1.0MM POLYURETHANE

EVA FOAM

2.0MM INJECTION MOLDED TPU

EVA FOAM

URETHANE RUBBER





# VALIDATION

**EMILY CARNEY**

DIRECTOR MATERIAL DEVELOPMENT  
FOOTWEAR

**DAVID LITTON**

SR. MATERIALS DEVELOPMENT  
FOOTWEAR

Experimentation with different materials and integration into textile is really interesting and exciting. The last development has a lot of overlap with new women's lasts being developed and could be a great tool for the future of women's basketball specific footwear especially since these athletes can vary more in height.



**KINAKO**

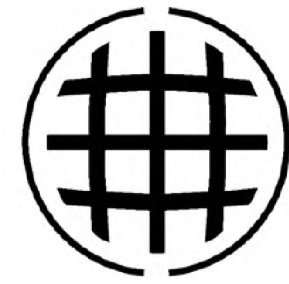
WOMEN'S OUTDOOR  
BASKETBALL ATHLETE

Loving the aesthetic and function you added. I think the lockdown features would be really helpful and the teal portions would definitely protect my shoes. The shoes look like they'd hug my ankle to provide support in addition to lockdown.

The apparel looks strong with the bright teal. I really like the cut away features in the apparel. The sleeves I wear always end up sliding down and ripping above and below the knee area so I really like the separated protective pads for both durability and flexibility.







**MONARCH ADDRESSES THE NEEDS FOR DURABILITY, MOBILITY, AND FEMALE-SPECIFIC FIT IN THE SPONTANEOUS AND FLUCTUATING ENVIRONMENTS OF OUTDOOR BASKETBALL.**





MONARCH

THANK  
YOU

