



Fashion, Function
And Foot health:

The triad of
modern footwear



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Select the Right shoe, to Save your lovely foot



Why am I talking to you about this topic ?





CERTIFICATE OF APPRECIATION

ISAKOS ACCREDITED COURSE

We proudly present this certificate to

who participated as a Delegate in the
Indo-European Arthroscopy Arthroplasty course held at
Sri Ramachandra Centre for Sports Science,
Chennai from Jan 31 - Feb 2, 2025

Prof. Philippe Landreau
President - Europe

Prof. Arumugam S
Executive President

Prof. Parag Sanchet
President-India



CERTIFICATE OF ATTENDANCE

This is to certify that

Malinda Ileperuma

Attended the

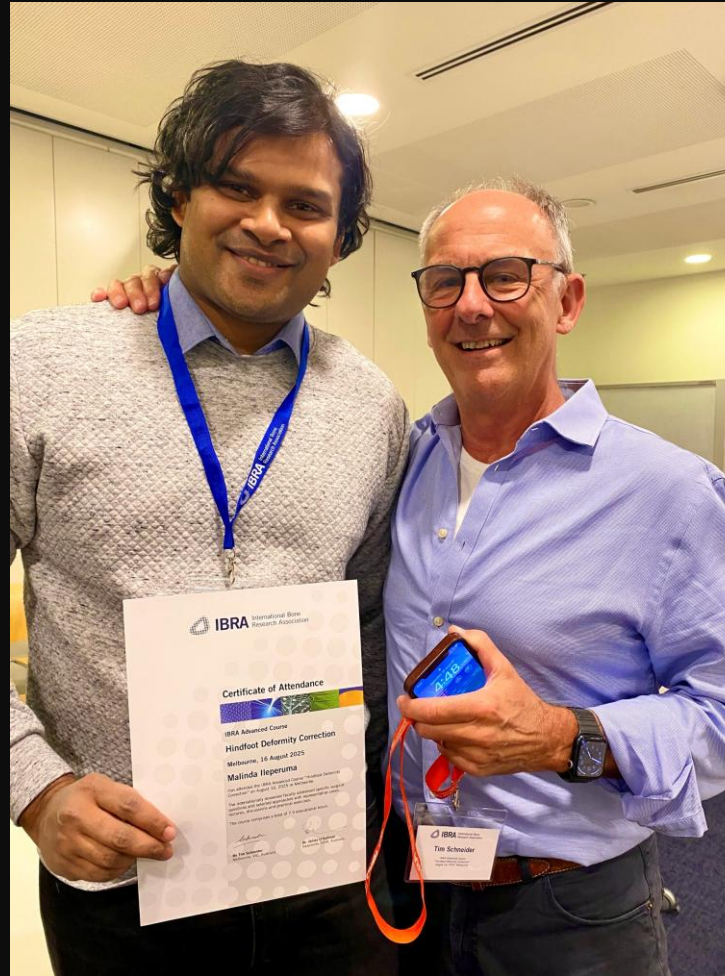
APOA2025 Congress
in Cairns, Australia

held on

9th to 12th of April 2025

Jamal Ashraf
APOA President

Marinis Pirpiris
Congress President





Foot and
Ankle

Me

Hip & Knee

Agenda Highlights

- **Footwear – Function**

- Running barefoot and with shoes – mechanics
- Running shoe anatomy
- Tips on selecting your running shoes

- **Footwear – Fashion**

- Heels – history
- Heels – biomechanics
- Heels – how to wear for optimal function and comfort

- **Footwear – Foot health**

- Biomechanical Impact on Performance
- Injury Risk Factors while wearing combat boots
- Anatomy of a Combat Boot
- Top-Rated Tactical Boot Comparison
- The Future: "Super Boots"



Foot Function

Running Shoes

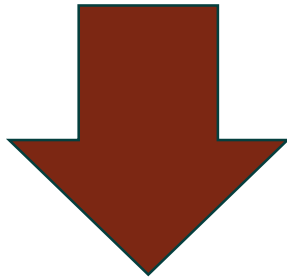


Foot and Ankle Structure – related to its function

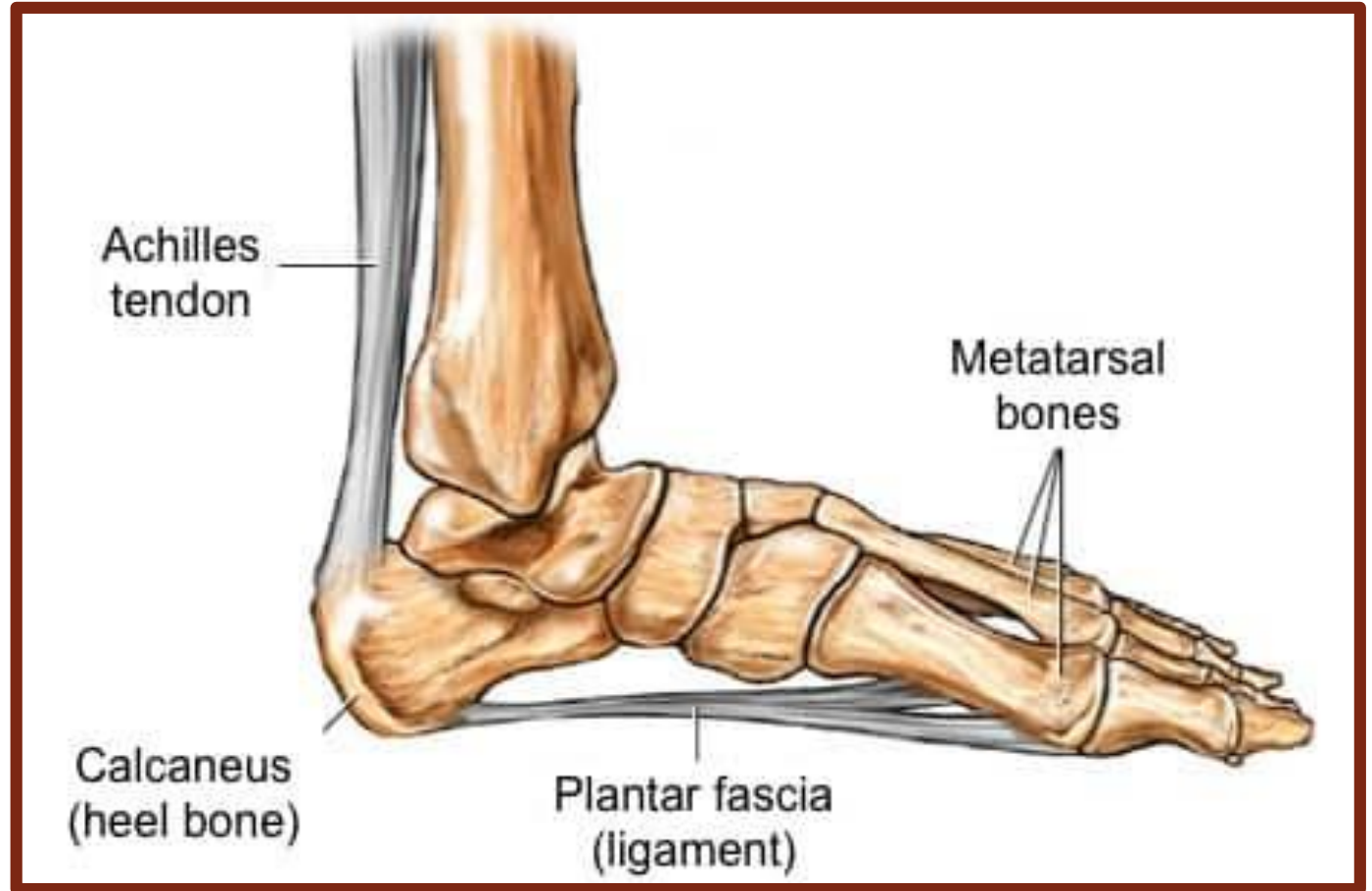
26 Bones

12 ligaments

4 Layers of Intrinsic muscles



Foot Structural integrity
maintained when absorbing
Peak Impacts



Evolutionary perspective on Walking



Inference:

- Human feet = Well adapted for locomotion 😊



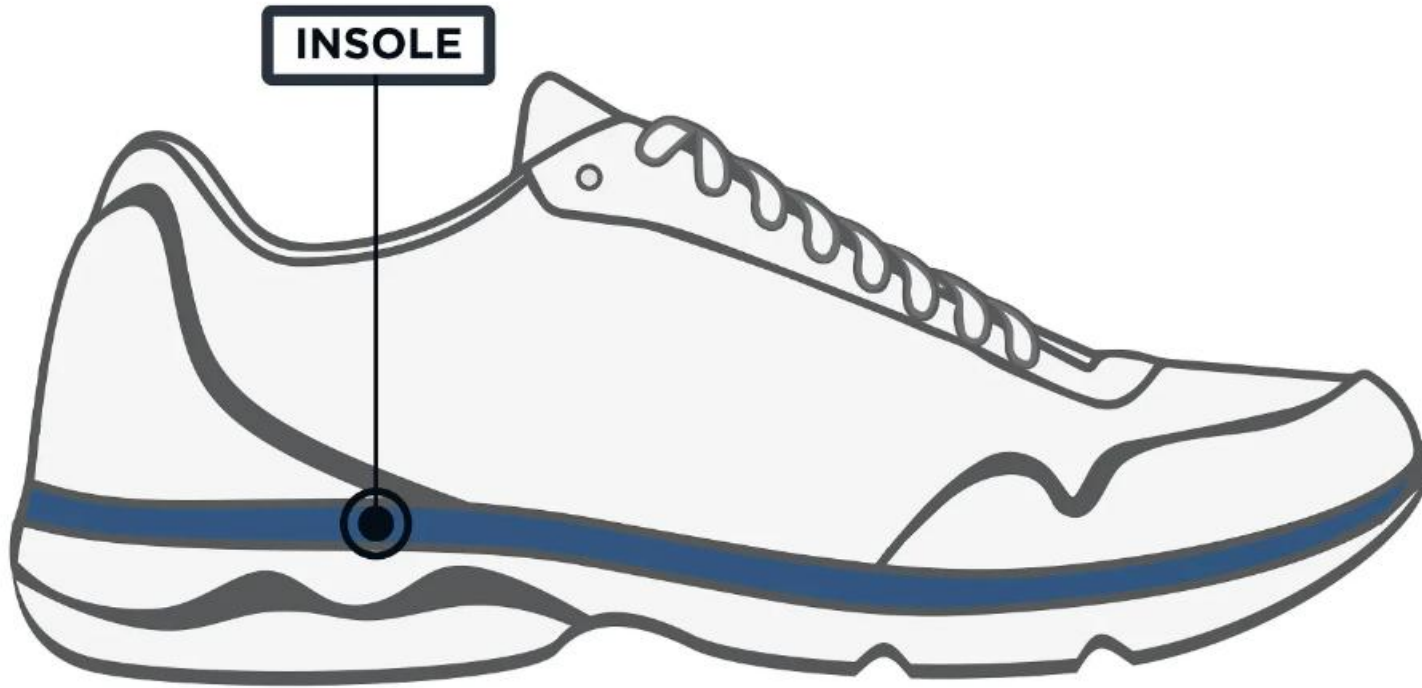


Anatomy of a Running shoe



- Knit-mesh upper
- **Racing** shoes →
Lighter uppers
- **Trail** shoes →
“weather-proof
upper”

Anatomy of a Running shoe



- **Function:**
 - Offer extra cushion & comfort
- Can insert **Additional arch support**
 - Rx of Plantar fasciitis, Pain relief

Anatomy of a Running shoe



- Function: Provide Comfort, shock absorption, energy return + stability & motion control
- Material: Foam / Gel

Runners with Flexible
arches



Rigid midsole (stability)

Runners with Rigid
arches



Flexible midsole
(Neutral shoes)

Racing shoes:

- Carbon plate / rods → propel body forward & upward → Reduce Energy cost of running



Heel-to-Toe drop

HIGHER:

- Pressure relief for calves, achilles (e.g. running injuries)



LOWER:

- Reduce strain on your knees & hips
- BUT More Load on AJ / Foot / Achilles Tdn & calf





What issues or injuries have your running shoes caused?

What issues or injuries have your running shoes caused?

How to choose the right running shoe

✗ Bad Fit



✓ Good Fit



right



wrong



Correct fitting shoes









**Unweighted
Size 10**



**Weighted
Size 10.5**





“Shoes are like a boy friend- you wanna love who they are now, just know that you can’t change them as much as you might want to.”

- a wise man once said



Don't rely on the size of your last pair of shoes



- Your feet do get larger !!!
- Shoemakers' sizing molds also vary







Foot Fashion

High Heeled
footwear



Stiletto



Kitten heels

Platform heels



Wedge Soles

Block heels





What type of high heels do you commonly wear ?

Historical perspective of High heels

10th century Persia



King Louis XIV (France): Only nobility allowed to wear heels



1950s: **Stiletto**



m shoes



Anatomy of a High Heel



Classification of High Heels

Height



High heels = >6 cm (up to 12cm)



Kitten heels = 3-5 cm

Classification of High Heels

Type



Platform heels



Wedge Soles



Block heels

Heels for different settings

Formal (Corporate dinner /
graduation / wedding)

Work wear

Parties



Heels → Effects

Movements

Posture

No Heels

A close-up photograph of a hand holding a yellow sign. The sign has the text "BOOST YOUR SELF CONFIDENCE" in bold, red and blue capital letters. The background is a blurred image of a person in a blue shirt.

**BOOST
YOUR SELF
CONFIDENCE**

Heels for Different types of Feet

Wide Feet



A FOOT AS SEEN BY
A SHOE DESIGNER



A SHOE AS SEEN BY
A FOOT DESIGNER



Heels for Different types of Feet

Narrow Feet



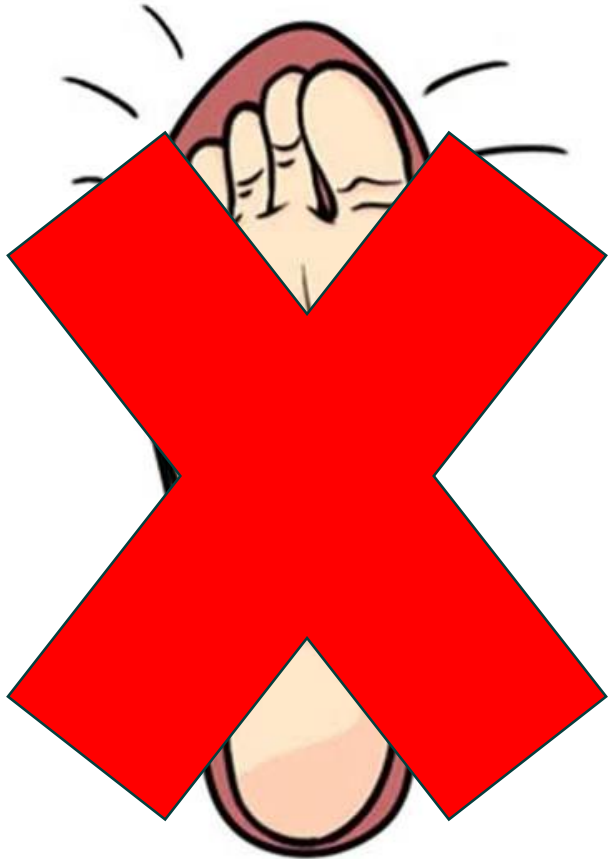
Heels for Different types of Feet

Flat feet



Heels for Different types of Feet

High arched Feet



How to walk comfortably in Heels

Familiarise your WB / Load bearing points



How to walk comfortably in Heels

Heel → Toe walking

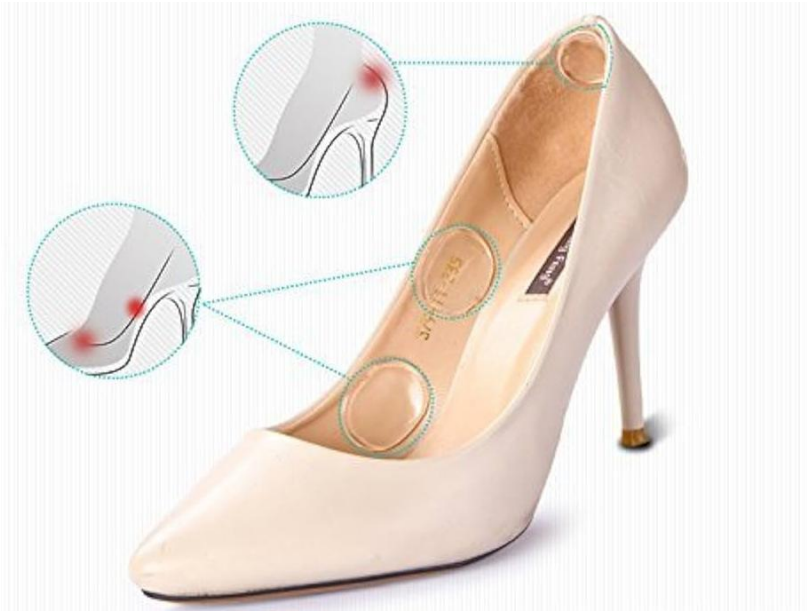


Tighten core + Hip sway



How to walk comfortably in Heels

Gel cushions



Padded inserts



How to walk comfortably in Heels

- Wear heels only for the function !!!
- Reduce heel height
- Choose right Toe box



FOOT HEALTH

MODERN MILITARY COMBAT BOOTS



- Higher Loads carried
- Longer duration of wear
- Challenging / Dynamic environments



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Biomechanical Impact on Performance

Metabolic Strain

- Cost of walking

Combat boots
vs
Civilian running shoes

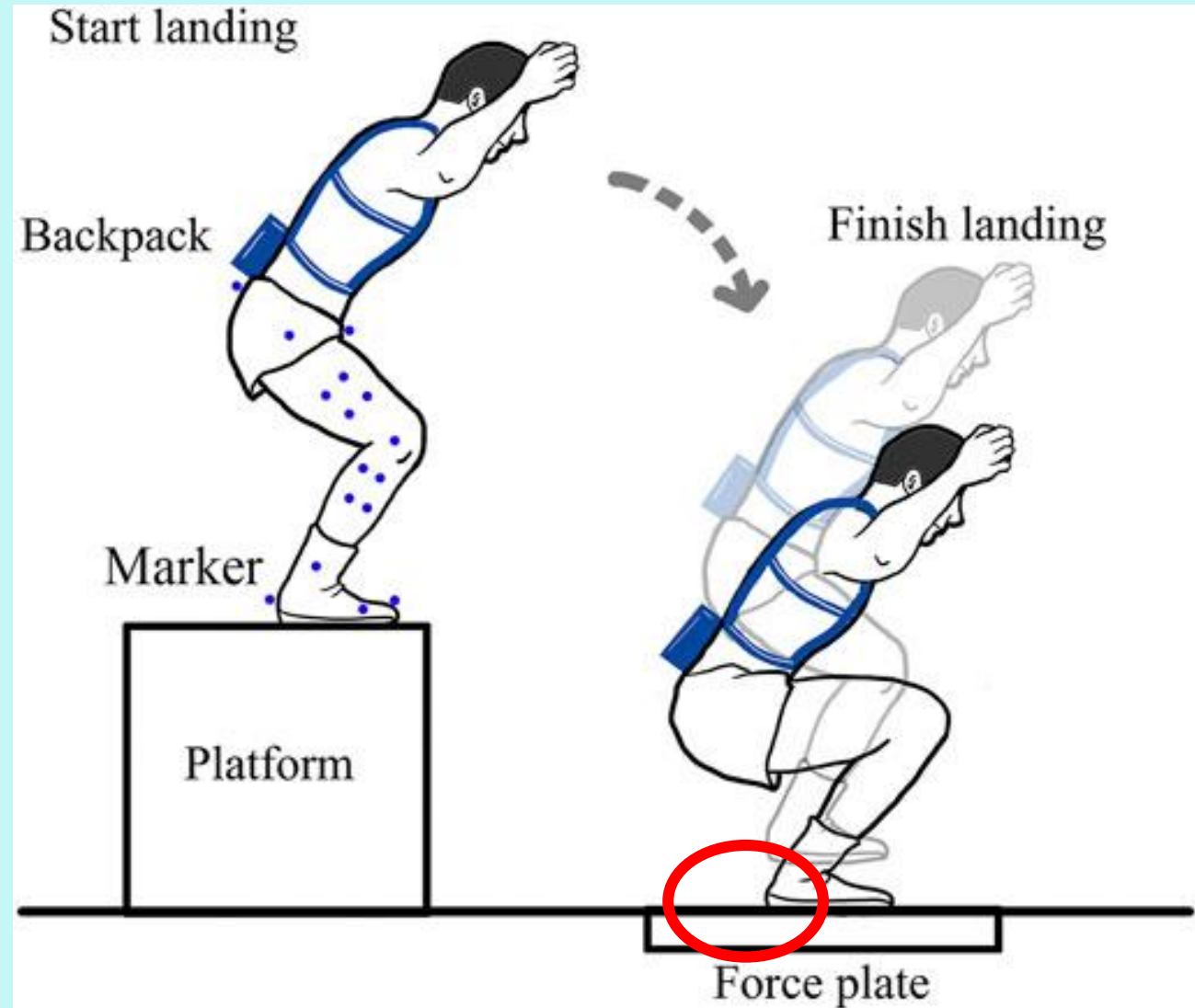
6-9%

Muscle Fatigue

Higher activation of Biceps femoris (hamstrings)



Ground Reaction Forces (GRF)

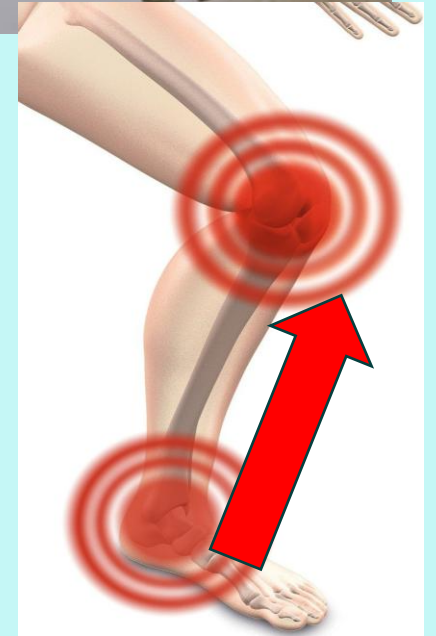


Injury Risk Factors

Associated injuries



Kinematic Shifts



Anatomy of a Combat Boot



PADDED COLLAR

Hardware: Eyelets, hooks

UPPER:
MESH/LEATHER/
FABRIC

TOECAP:
LEATHER/RUBBER/
FABRIC

RUBBER OUTSOLE

MIDSOLE

Shank



Optimal Upper & Lining Features – Material selection

Chrome-tanned waterproof **Leather** → Cold / wet environments

Plain **Nylon** canvas → Hot climates
(←maximize air permeability)

Duration &
Longevity

Reinforced
Stitching !!



Superior Ankle Support



Protection from Hazards

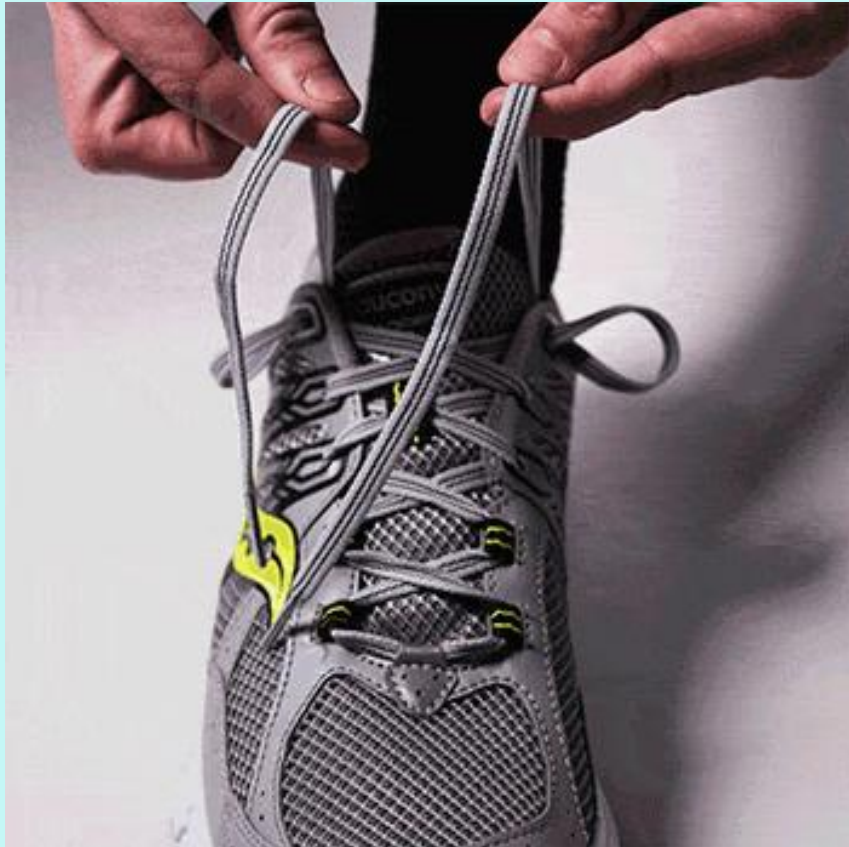


PROOF

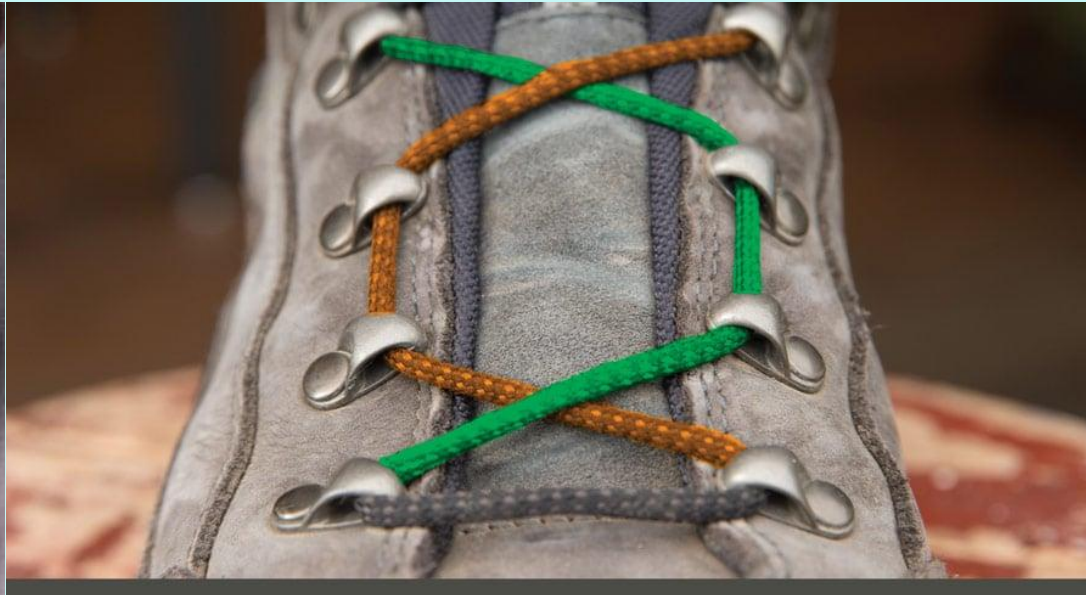


Lacing Systems: "Hiking" style lacing

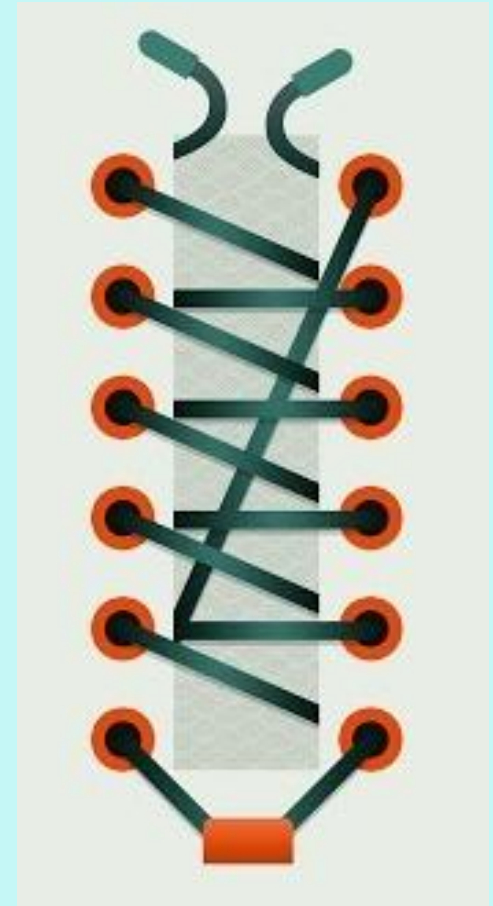
Heel Lock/Surgeon's Knot



Window Lacing (Box Lacing)



Toe-Relief Lacing



Thermal Comfort

Hot climates:

- Plain nylon canvas uppers
- warp-knitted lining fabrics



Cold climates:

- Chrome-tanned waterproof upper leather
- Sheepskin lining leather



Shock Absorption

- Honeycomb structures

- Advanced polyurethane midsoles



Traction

Weight

- High-abrasion rubber outsoles (e.g., [Vibram®](#))





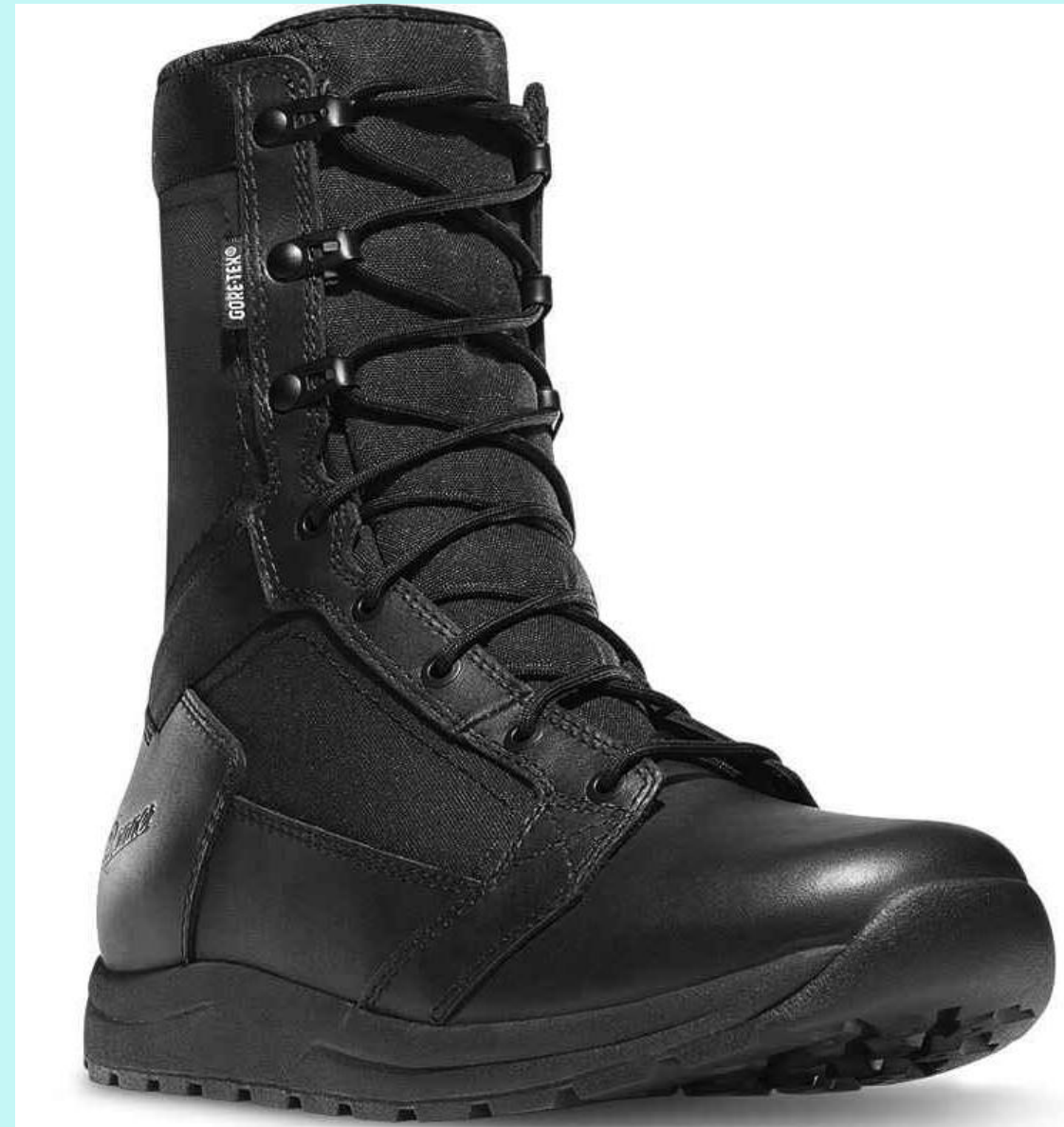
Top-Rated Tactical Boot Compariso

Danner Tachyon 8 Boots

- Light weight
- HIGH breathability
- Vibram soles (High-abrasion rubber)

Ideal for

- Faced paced military operations
- Reliable traction



Salomon XA Forces Mid GTX

- Advanced foot support
- **Gore-tex™** lining

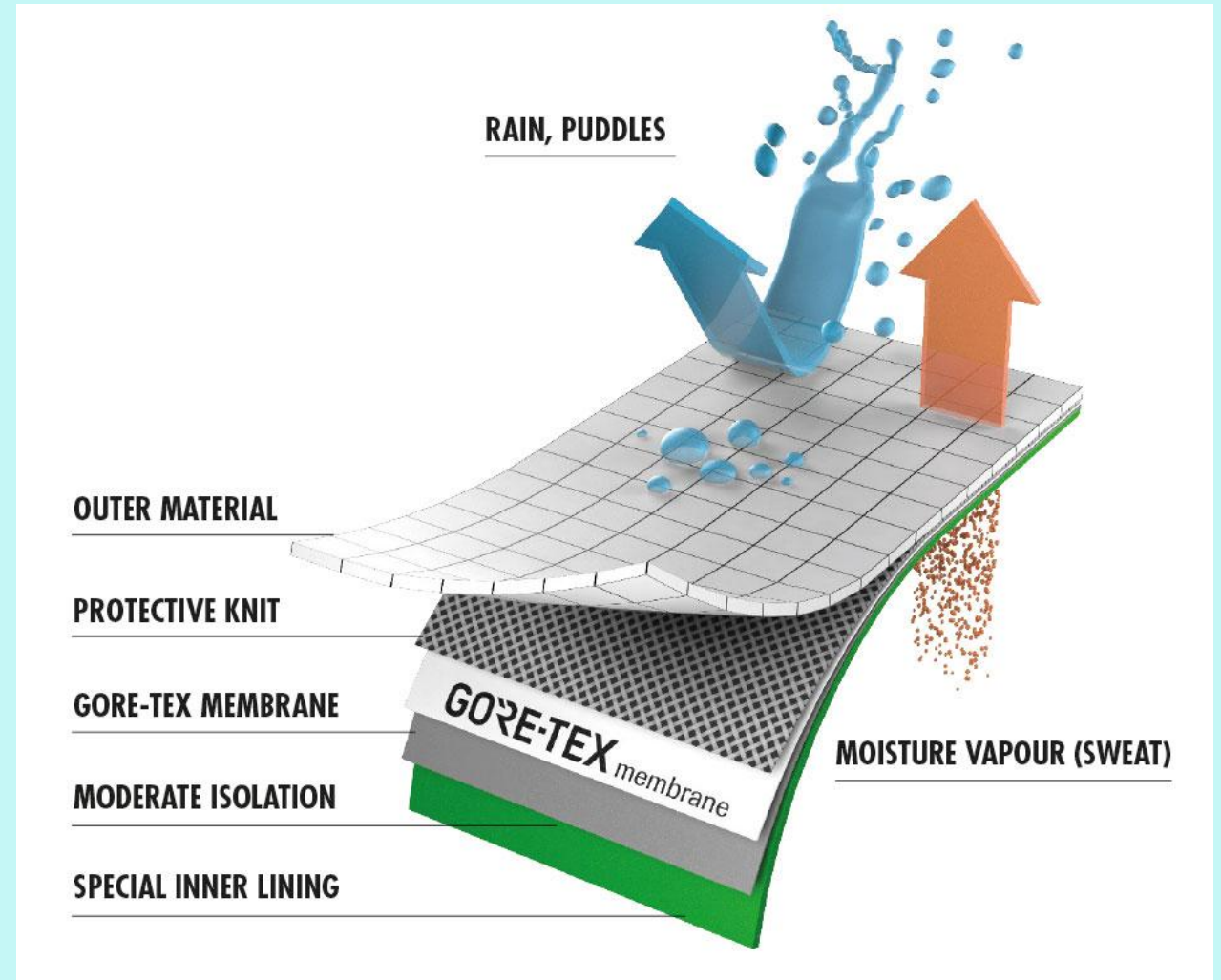
Ideal for

- All weather protection
- Superior grip



Gore-tex™

- Expanded polytetrafluoroethylene (ePTFE)
- For Extreme, all-weather conditions
- Goal:
 - Ensure wearer stays dry



Lowa Zephyr GTX Mid

- Ankle stability
- Breathability

Ideal for

- Rugged environments
+ extended missions



Garmont T8 NFS 670 tactical boots

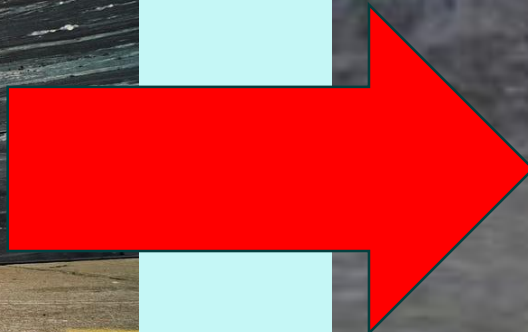
- Ortholite insoles
- Durablity

Ideal for

- High Durability with Increased comfort
- Specific insert technology



The Future: "Super Boots"

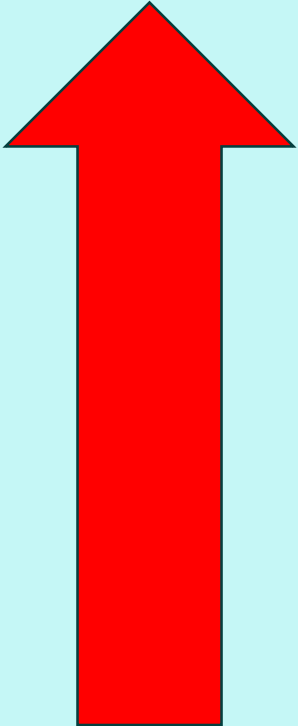


Concept = Adapting civilian "super shoe" technology





7.9-15.1%



10% economy
impairment
typically
caused by
boots



10% **increase**
in running
economy
wearing
“super boots”



Environmental
Adaptability

Comfort and
Shock
Absorption

Durabilit
y and
Longevity

**"PERFECT
BOOT"**

Superior
Ankle
Support

Exceptiona
l Traction

Protectio
n from
Hazards