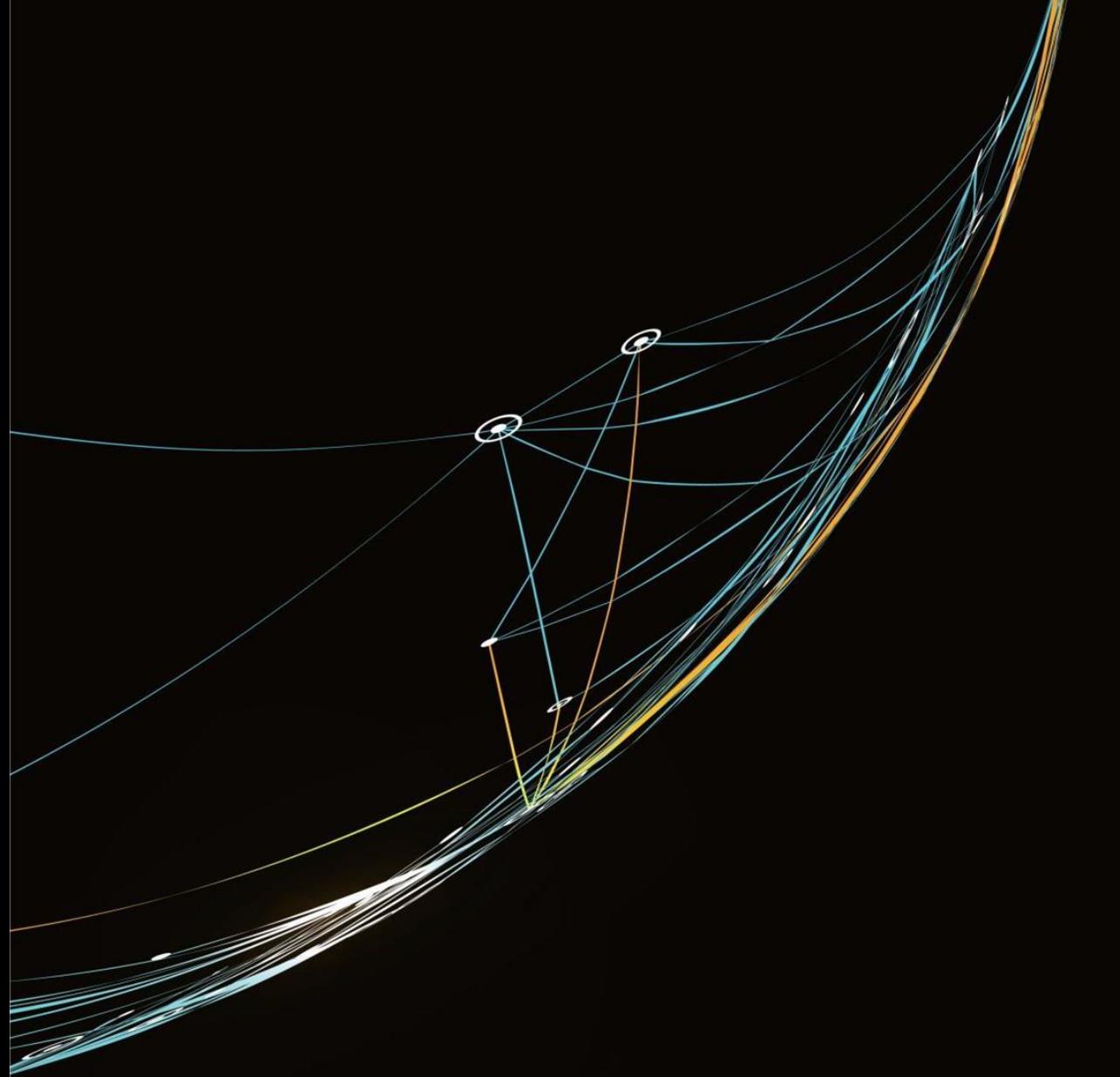


# VTE PROPHYLAXIS IN ADULT TRAVELERS

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# TRAVEL AND VTE

- Long-distance travel, either by air or land, confers a small increased risk of venous thromboembolism (VTE) .

# LONG-DISTANCE TRAVEL

- The rates are higher in those who travel for prolonged periods (eg, >4 hours) and is greatest in the first two weeks after travel





# INCIDENCE

- The incidence of developing clinically-important or symptomatic DVT after air travel is  $<0.05$  percent . Although some studies reported higher rates of DVT with  $>4$  hours (2.8 percent) or  $>12$  hours (3.6 percent) air travel, most of these DVTs were small, involving the distal (calf) veins and, likely, clinically unimportant



# INCIDENCE IN META- ANALYSIS

- In one meta-analysis of 14 studies, the pooled risk for VTE in travelers, compared with non-travelers, was 2.8.



# RISK FACTORS

- The majority of individuals with travel-associated venous thromboembolism (VTE) have one or more known risk factors for thrombosis, although isolated cases of idiopathic VTE have also been reported



# COMMON RISK FACTORS

- Common risk factors associated with travel-related VTE include those associated with VTE in general:
  - Recent major surgery (including hip or knee arthroplasty within six weeks)
  - Prior VTE (including travel-associated VTE)
  - Active malignancy
  - Pregnancy
  - Advanced age
  - Use of estrogen-containing oral contraceptives or other estrogen preparations
  - Obesity
  - Hereditary thrombophilia

**LESS  
COMMONLY  
CITED RISK  
FACTORS  
INCLUDE:**

Immobility and window seating

- The presence of two or more risk factors for VTE (eg, oral contraceptive use plus factor V Leiden mutation)

- Female gender



# PATHOGENESIS

- The reasons for thrombosis associated with air travel are unclear. Possible contributing factors during extended travel may include venous stasis due to immobility, and elevated levels of, or activation of, coagulation factors (FII, FVIII, FIX, thrombin-antithrombin III complex, and fibrinogen)



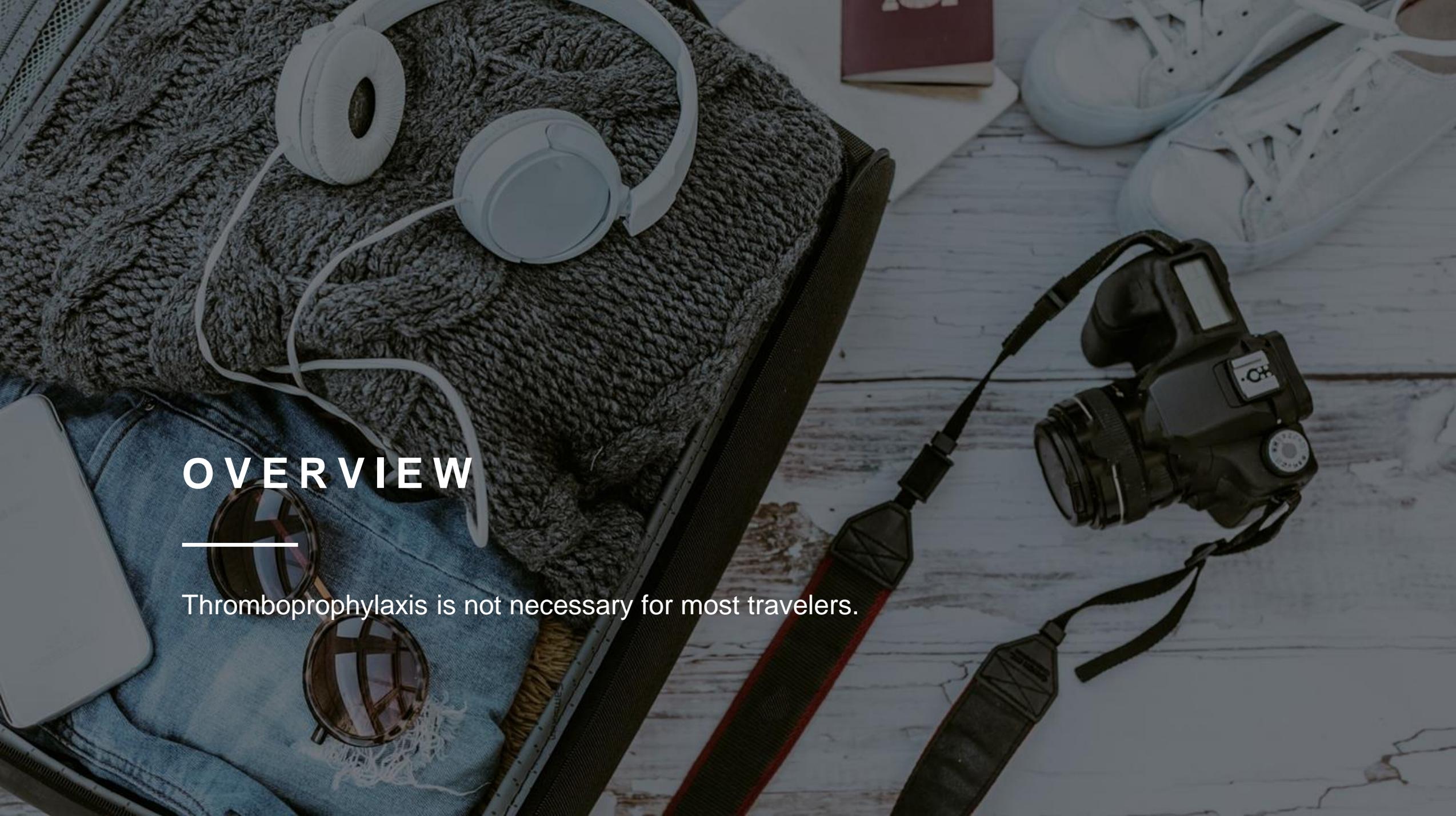
# DEHYDRATION AND ALCOHOL

- Although there is no definitive evidence that dehydration or alcohol consumption contribute to an increased risk of venous thromboembolism (VTE), dehydration can theoretically promote a coagulopathic state and alcohol consumption can promote immobility.



# SCREENING??

- The impact of screening for risk factors or coagulation factors prior to travel on the incidence of VTE has not been studied and is not routinely recommended.

A top-down view of travel gear on a light-colored wooden surface. On the left, a grey knitted sweater is folded, with white over-ear headphones resting on it. Below the sweater are blue denim jeans and a pair of round sunglasses. To the right, a black DSLR camera with a lens is attached to a black strap with red accents. In the upper right corner, a pair of white sneakers is visible. A small red book or card is partially visible in the top center. The entire image has a dark, semi-transparent overlay.

# OVERVIEW

Thromboprophylaxis is not necessary for most travelers.

# WHAT SHOULD WE DO?

- Individuals at risk for travel-associated venous thromboembolism (VTE) (eg, travel more than four to six hours in individuals with risk factors for VTE) may benefit from simple general measures plus graduated compression stockings.

# GENERAL MEASURES



FREQUENT AMBULATION,  
EVERY ONE TO TWO HOURS

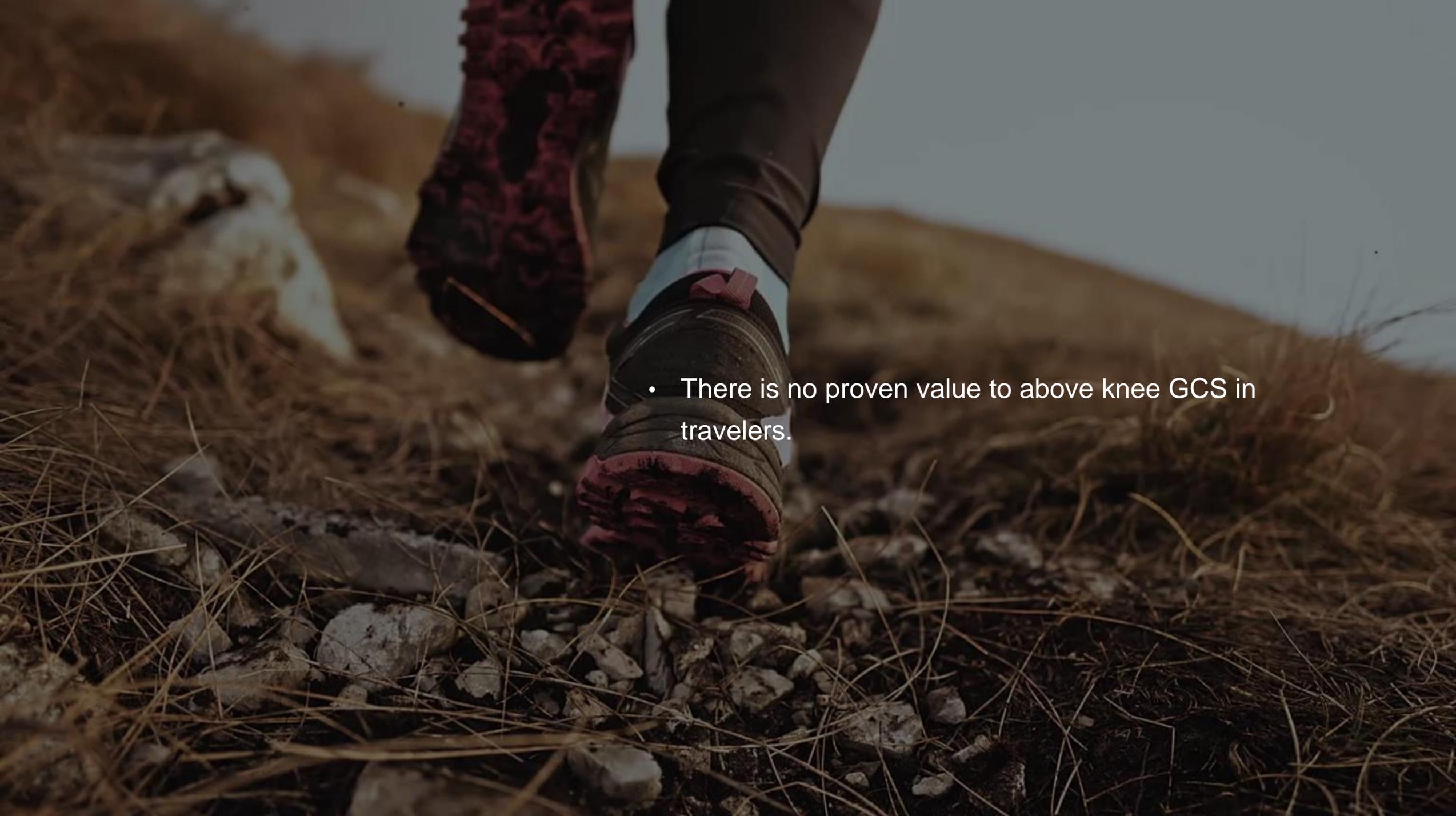


• FREQUENT FLEXION AND  
EXTENSION OF THE ANKLES  
(CALF MUSCLE STRETCHING)  
AND KNEES (THIGH MUSCLE  
STRETCHING)

## **GRADUATED COMPRESSION STOCKINGS**

- below-knee graduated compression stockings (GCS) (15 to 30 mmHg of pressure at the ankle) may be beneficial in patients considered to be at high risk for travel-associated VTE



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- A low-angle, close-up shot of a person's feet in hiking boots stepping on a rocky trail. The boots are dark with red accents on the soles. The person is wearing light-colored socks and dark leggings. The ground is covered with dry, brown grass and small rocks. The background shows a hilly landscape under a clear sky.
- There is no proven value to above knee GCS in travelers.

# PHARMACOLOGIC PROPHYLAXIS

- There is a paucity of data examining the safety and efficacy of pharmacologic prophylaxis for the prevention of travel-associated VTE.
- Data from small or retrospective studies provide insufficient evidence to support routine pharmacologic prophylaxis for extended travel in the at-risk population of travelers.
- However, pharmacologic prophylaxis can be administered on an **individual basis to travelers at particularly high risk (eg, prior VTE plus multiple risk factors)** when it is considered by their physician that the benefits of VTE prevention outweigh the risks of bleeding or other adverse event

# SUMMARY

- Thromboprophylaxis is not necessary for most travelers. For long-distance travelers with individual risk factors for VTE, we suggest thromboprophylaxis with general measures (frequent ambulation and calf exercises and graduated compression stockings) rather than no prophylaxis or pharmacologic prophylaxis to reduce the risk of travel-associated VTE (Grade 2C).





## SUMMARY

- While pharmacologic thromboprophylaxis is not routinely indicated, it is an option for patients at particularly high risk for VTE who consider a potential decrease in travel-associated VTE to outweigh the small increased risk of bleeding