

**Abstract:**

**OBJECTIVE:** Venipuncture is an invasive procedure, and repeated puncture attempts may be uncomfortable or even traumatic for patients. Vein visibility is one of the most influential variables for the failure of venipuncture; however, the factors affecting vein visibility remain unclear. The present study was conducted to identify the factors influencing vein visibility at the upper limb in healthy young adults.

**METHODS:** Twenty-seven healthy volunteers were included. All measurements were performed at the right arm, right cubital fossa, and right forearm. The depth and cross-sectional area of superficial veins were measured by ultrasonography. Skin color was assessed by a spectrophotometer and quantified according to Commission International d'Eclairage L\*a\*b\* values.

**RESULTS:** Invisible superficial veins were significantly deeper and had a larger cross-sectional area than visible superficial veins. Skin color b\* of invisible superficial veins was significantly higher than that of visible superficial veins. Vein depth, skin color b\*, and gender markedly affected superficial vein visibility at the upper limb. The cutoff for vein depth was 2.3 mm (area under the curve = 0.91).

**CONCLUSION:** The present results confirmed that vein depth, skin color b\*, and gender strongly influenced vein visibility at the upper limb. The cutoff for vein depth was 2.3 mm.

**Reference:**

Mukai, K., Fujii, T., Nakajima, Y., Ishida, A., Kato, M., Takahashi, M., Tsuda, M., Hashiba, N., Mori, N., Yamanaka, A. and Nakatani, T. (2020) Factors affecting superficial vein visibility at the upper limb in healthy young adults: A cross-sectional observational study. *The Journal of Vascular Access*. March 19th. doi: 10.1177/1129729820909187. (Epub ahead of print).