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Foot Characteristics of Shod and Unshod Populations

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Introduction

Traditionally, all footwear is designed from a single last (Wunderlich & Cavanagh, 2001). However, factors such as race and habitual footwear have been shown to affect foot shape (Gurney et al., 2009; Kusumoto, Suzuki, Kumakura, & Ashizawa, 1996). Ashizawa et al. (1997) studied the foot morphologies of Japanese, Filipino, and Javanese men. It was found that the habitually unshod men had a longer foot relative to stature and a wider foot relative to foot length compared to the habitually shod men.

Purpose

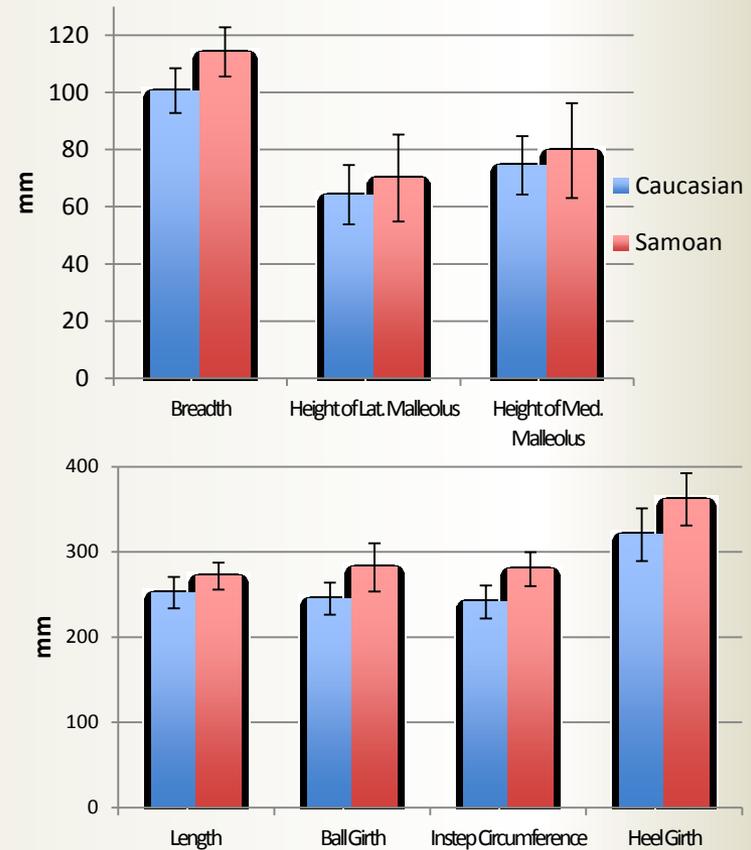
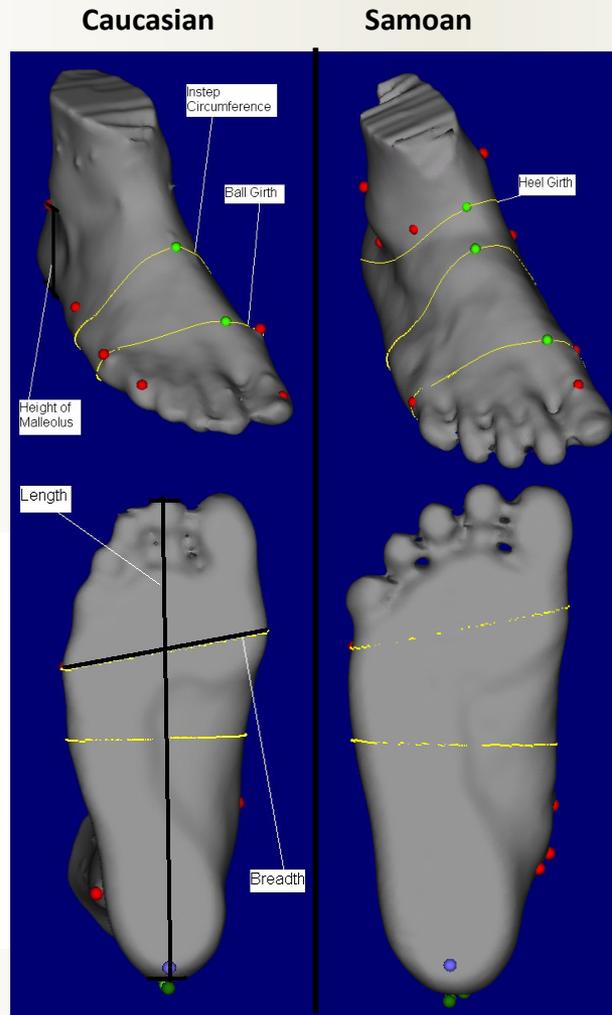
The purpose of this study was to compare foot characteristics of a shod (Caucasian) and unshod (Samoan) population.

Method

116 Samoan subjects (34.8±15 years)
106 Caucasian subjects (34.0±15 years) Subjects had their feet scanned one at a time in the 3-D foot scanner (Figure 1). Scans were completed with 50% weight bearing on each foot, and seven measurements were compared between populations.



Figure 1. INFOOT 3-D Scanner



Discussion

It was hypothesized that the typical Samoan foot would be longer and wider than the typical Caucasian foot (Ashizawa et al., 1997). Not only was this true, the shape of the foot was also markedly different. The Samoan foot seemed to have unique characteristics such as a larger protrusion of flesh from the lateral edge of the forefoot and a hook-like fifth toe. Defining and quantifying those differences is a necessary preliminary step in the design of footwear specialized for the Samoan population.

References

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