

**LAETOLI DATA: Published footprint lengths - foot lengths - and estimated stature (height)**

**Source 1** of the more complete trackway (north and south portions), but only outlines of G1 and G2 tracks (used with kind permission of the *Scientific American* artist Laurie Grace):

*Scientific American*, September, 1998, pp. 44-55. “**Preserving the Laetoli Footprints**” by Neville Agnew and Martha Demas:

Total trackway (page 47): 54 footprints in the trail, which runs 27 meters long (89 feet)

**G.1-36 (small, right foot):** length of footprint is **about 20 cm (8 inches)** [See below for better numbers]

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**Source 2** of the 1/5 scale Laetoli trackway used for our “Laetoli Topo Trackway” segment in digital format: Leakey, Mary D. & J.M. Harris (Ed). 1987. *Laetoli: a Pliocene Site in Northern Tanzania*. Clarendon Press, Oxford. Chapter 13 “Hominid Footprints”, pp 490-502 (copied; pp beyond: 505, 508-510)

**Stature of G-1 individual:**

**Length of G-1 hominid foot** is about 173 mm (165-185 mm range) [this **average** is about **17.3 cm**]

Pace length for **right-to-left** footprints has mean distance of 346 mm (250-470 mm range)

Pace length for **left-to-right** footprints has mean distance of 355 mm (170-460 mm range, due to pause in trail)

**foot-length-to-stature** ratio of 15% (Martin’s ratio using actual **foot** length of living subjects) yields stature of ~ 1147 mm or 45 inches tall.

**footprint-length-to-stature** ratio of **14% (Robbins’ ratio)** yields stature of 1229 mm or **48 inches tall**.

An estimate of 46 in. +/- 1 inch is probably a reasonable one for the stature of the G-1 hominid.

**Stature of G-2 individual:**

Mean length of G-2 footprints is 264 mm (260-270 mm range)

Pace of G-2 right-to-left: mean of 474 mm (445-505 mm range)

Pace of G-2 left-to-right: mean of 432 mm (405-550 mm range)

Difference in right and left pace lengths suggests a right foot dominance.

Stride cycle for right foot: 865 mm

Stride cycle for left foot: 895 mm (about a 70 mm range for each foot)

**Martin’s 15% ratio** of **foot** length-to-stature: 1760 mm (or **5’9”**) **tall**.

Complete long bones of likely hominid species who might have foot size comparable to G-2 have not been found to date, therefore no way to check this height against estimate based on other evidence.

Estimate of stature based on **Robbins’ 14% ratio using footprints not given**

[NOTE: This is something students could calculate; however, when I try this for G1 and G2, my results come out about 6-7 mm taller than their results. I used the derived formulas:  $ht = \text{footprint length} / 0.14$ , or  $ht = \text{foot length} / 0.15$  Of course, the main lesson has the class plotting all student heights-to-footlengths to arrive at their correlation].

**Stature of G-3 individual:**

Mean length of G-3 footprints averages 212 mm (range of 205-227 mm), with left foot consistently 4-6 mm shorter than right one.

Right-to-left foot pace length: 463 mm (range 410-570 mm)

Left-to-right pace length: 455 mm (range of 280-530 mm)

G-3 foot appears more slender than the G-2 foot

With Martin’s 15% ratio, using actual feet, G-3 was 1413 mm or 56” tall

With **Robbins’ 14% ratio**, using **footprints**, G-3 was **nearly 5 feet tall** (59.62 inches).

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I recommend that a few students make some sample footprints in damp sand, then compare their **foot** lengths with their corresponding **footprint** lengths to arrive at the likely **foot** lengths of the Laetoli trackway makers. Even better, go to a seashore or lakeshore, and walk several steps in the damp but firm sand. Measure lengths of footprints and the feet that made them. Measure pace and stride. Vary with fast and slow walking. Try to replicate the Laetoli trackways and how they were likely made, using 3 short people. What is discovered?