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3.2.6.3.22 Landmark 22: Lateral calibration point

Definition:

Lateral corner of the distal frame on the Perspex impression platform



Figure 3.34: Dorsal view of landmark 22

A summary of the anatomical landmarks is presented on the following page.

3.2.6.3.23 Summary of anatomical landmarks

To facilitate quick reference, below is a listing of the anatomical (morphometric) landmark sequence. This is also illustrated in Figure 3.35 on page 65.

1. Most proximal point at the back of the heel curve along the coronal plane bisection
2. Tuberosity of the navicular bone
3. Highest point of the arch
4. Widest part of the foot in the sagittal plane at the 1st MTP joint
5. Distal Tip of the hallux or big toe
6. Distal Tip of the second toe
7. Distal Tip of the third toe
8. Distal Tip of the little toe
9. Widest part of the foot in the sagittal plane at the 5th MTP joint
10. Styloid process (base of 5th metatarsal)
11. Top of the hallux, at the base of the toenail
12. Top of the instep, at point of maximum out curvature
13. Top of the instep at point of maximum in curvature (at ankle)

Followed by (on the foam)

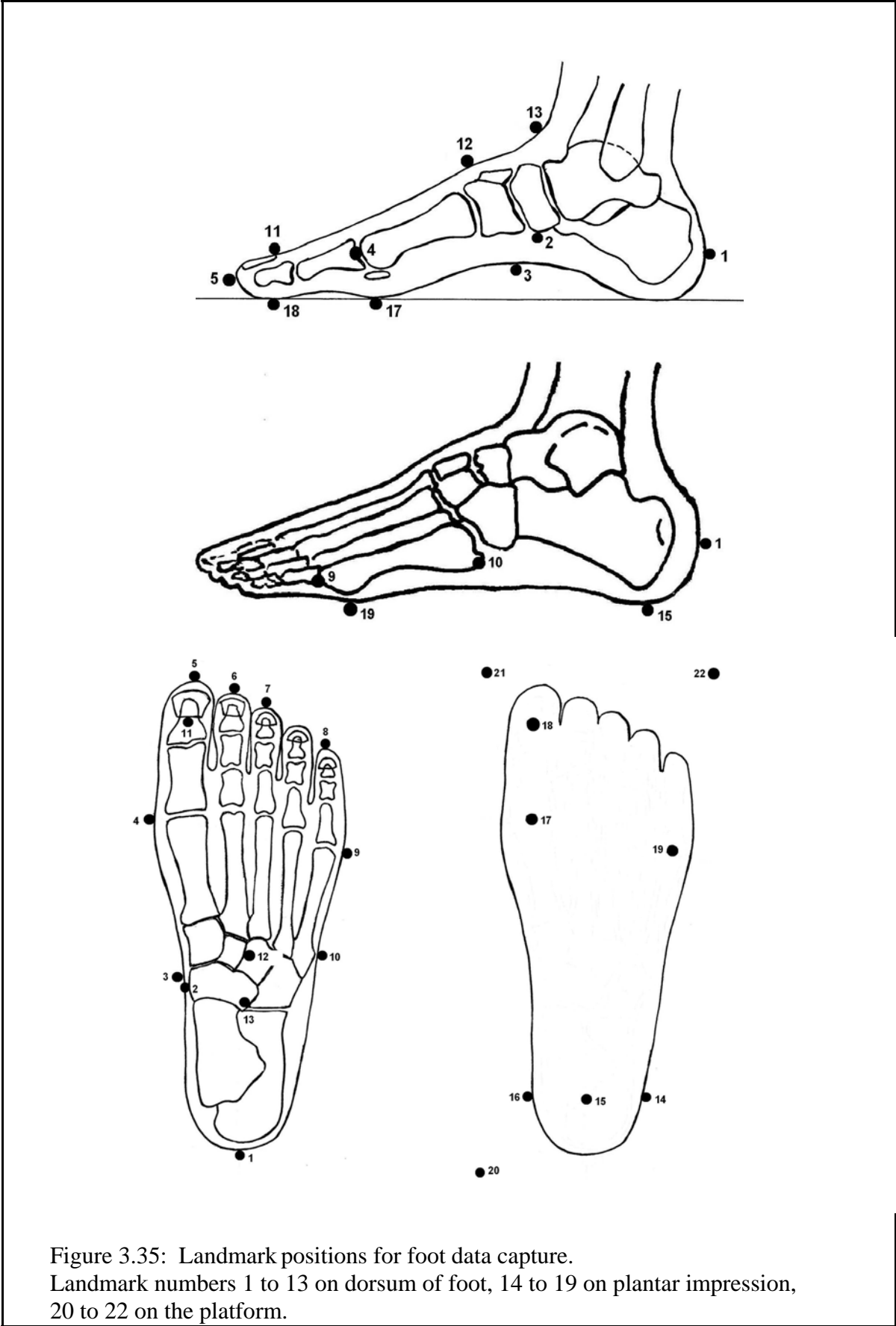
14. Widest point at lateral heel margin
15. Lowermost point under the centre of the heel
16. Widest point at medial heel margin
17. Lowermost point under the centre of the 1st MP joint
18. Lowermost point under the pulp of the hallux or big toe
19. Lowermost point under the 5th mpj

Followed by (on the flat horizontal surface of the platform)

20. Centre dot on the calibrating plate of the transmitter on the Perspex base platform
21. Medial corner of the frame of the Perspex base platform
22. Lateral corner of the frame of the Perspex base platform

The calculated euclidean measurements from these are

- A. Overall foot length = distance from 6 to 1 or 5 to 1 (whichever is greater)
- B. Minor foot length = distance from 8 to 1
- C. Toe height = distance from 11 to 18
- D. Tread width = distance from 9 to 4
- E. MPJ5 height = distance from 19 to plantar plane at 17
- F. Navicular height = distance from 2 to plantar plane at 17
- G. Medial arch height = distance from 3 to plantar plane at 17
- H. Heel seat width = distance from 14 to 16
- I. Heel height = distance from 15 to plantar plane at 17
- J. Forefoot girth = circumference at 4 through 9



3.2.6.4 Selection of landmarks on lasts

As stated in 1.7.1, not all parameters on the last can be directly compared to all foot measurement parameters. For example, a last will incorporate a fitting allowance ahead of the toes so that the toes do not touch the distal inner of the shoe. This fitting allowance for foot length can vary between styles and may be between 6mm to 16mm (Riches, 1980b:20).

In the study, measurements derived from 3-D scanning were labeled from A to L.

Table 3.3 lists eight of those parameters for both the foot and the last that can be compared in the present study. The placement of landmarks on the last was based on positions that are inherent in the design of the last and these were marked before scanning.

Table 3.3. Foot and Last comparable parameters.			
Foot Variable	Description	Last Variable	Description
A	Overall foot length	A	Overall last length*
B	Minor foot length	B	Minor last length
C	Hallux height	C	Toe box height
D	Tread width	D	Tread width
H	Heel seat width	H	Heel seat width
J	Forefoot girth	J	Joint girth
K	Heel to 1 st MPJ	K	Heel to inside joint
L	Heel to 5 th MPJ	L	Heel to outside joint

* This measurement includes a fitting allowance of 10mm that will be subtracted from the last measurement before comparison.

A listing of the last landmark definitions is shown in 3.2.6.5.

This forms the basis of this study's function of comparison.

3.2.6.5. Comparable last landmark definitions

On the last surface after scanning, these were the landmarks captured:

1. Most proximal point of the back of the heel curve, along the frontal plane bisection
2. not applicable
3. not applicable
4. Widest part of the last in the sagittal plane at the forefoot medial border
5. Distal Tip of the last
6. not applicable
7. not applicable
8. not applicable
9. Widest part of the last in the sagittal plane at the forefoot lateral border
10. not applicable
11. Top of the last, at a point representing the dorsal peak of a waist girth
12. not applicable
13. not applicable

Followed by (on the foam)

14. Widest point at lateral heel margin
15. Lowermost point under the centre of the heel
16. Widest point at medial heel margin
17. Lowermost point of the medial forefoot
18. Lowermost point of the medial distal forefoot
19. Lowermost point of the lateral forefoot

Followed by (on the flat horizontal surface of the platform)

20. Centre dot on the calibrating plate of the transmitter on the Perspex base platform
21. Medial corner of the frame of the Perspex base platform
22. Lateral corner of the frame of the Perspex base platform

The calculated euclidean measurements from these are

- K. Overall last length = distance from 5 to 1
- L. Minor last length = distance from 9 to 1
- M. Last Box Toe height = distance from 11 to 18
- N. Last Tread width = distance from 9 to 4
- O. Heel seat width = distance from 14 to 16
- P. Forefoot girth = circumference at 4 through 9
- Q. Heel to ball at inner joint
- R. Heel to ball at outer joint

Figure 3.36 illustrates the landmarks as placed on the “Ingrid” size 4 last. It will be noted that as many landmarks were placed as number of landmarks used for the foot, even those that could not be placed with the aid of palpation, so as to use the same Microsoft Excel

macro software program to calculate measurement distances from comma separated values.

