

IV. Electrode Placement

- A. G0 (ground)—lower portion of leg between G1 and S1.
- B. G1 (active)—3 cm proximal to G2 and just medial to the tibialis anterior tendon
- C. G2 (reference)—anterior to the highest prominence of the medial malleolus, in the space between the medial malleolus and the medial border of the tibialis anterior tendon.

V. Stimulation Sites and Measurements

A. Pt. A:

- 1. Stimulate—S1, 12 cm from G1, deep to the medial border of the tibia, between the medial gastrocnemius and the tibia.
- 2. Measure—distance from S1 to G1 in a straight line. On adults use distance of 12 cm.

VI. Calculations

- A. Distal Latency—Calculate from the shock artifact to the peak of the negative deflection.
- B. Amplitude—Calculate from the peak of the initial positive deflection to the peak of the negative deflection.

VII. Variations and Pitfalls

- A. Motor response may appear as sensory response—check response carefully.
- B. Cold may cause a long distal latency with a normal amplitude.
- C. Responses are generally significantly lower than the sural or superficial peroneal sensory responses.
- D. Stimulations and pressure from the bipolar stimulator is often very painful.
- E. Frequently the response is unobtainable even in a "normal" population.

VIII. Normal Values (54)

| AMPLITUDE | DISTAL LATENCY |
|-----------|----------------|
| μ v | msec |
| 4-12.4 | 3.0-4.0 |

Sural (sensory-antidromic)/lateral malleolus (10, 48, 50)

I. Position of Patient

- A. Patient lies on side with side to be examined up and knee slightly flexed.
- B. Leg is supported by the bed and/or other leg so it is completely relaxed.

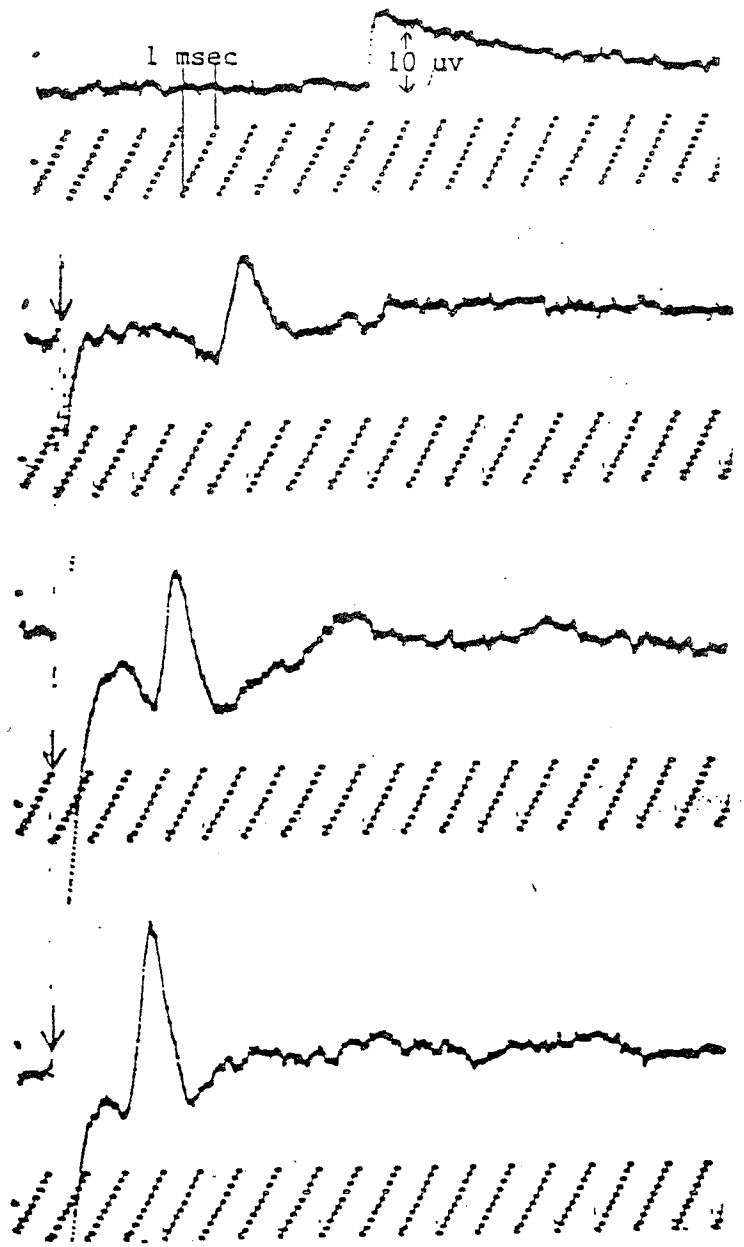
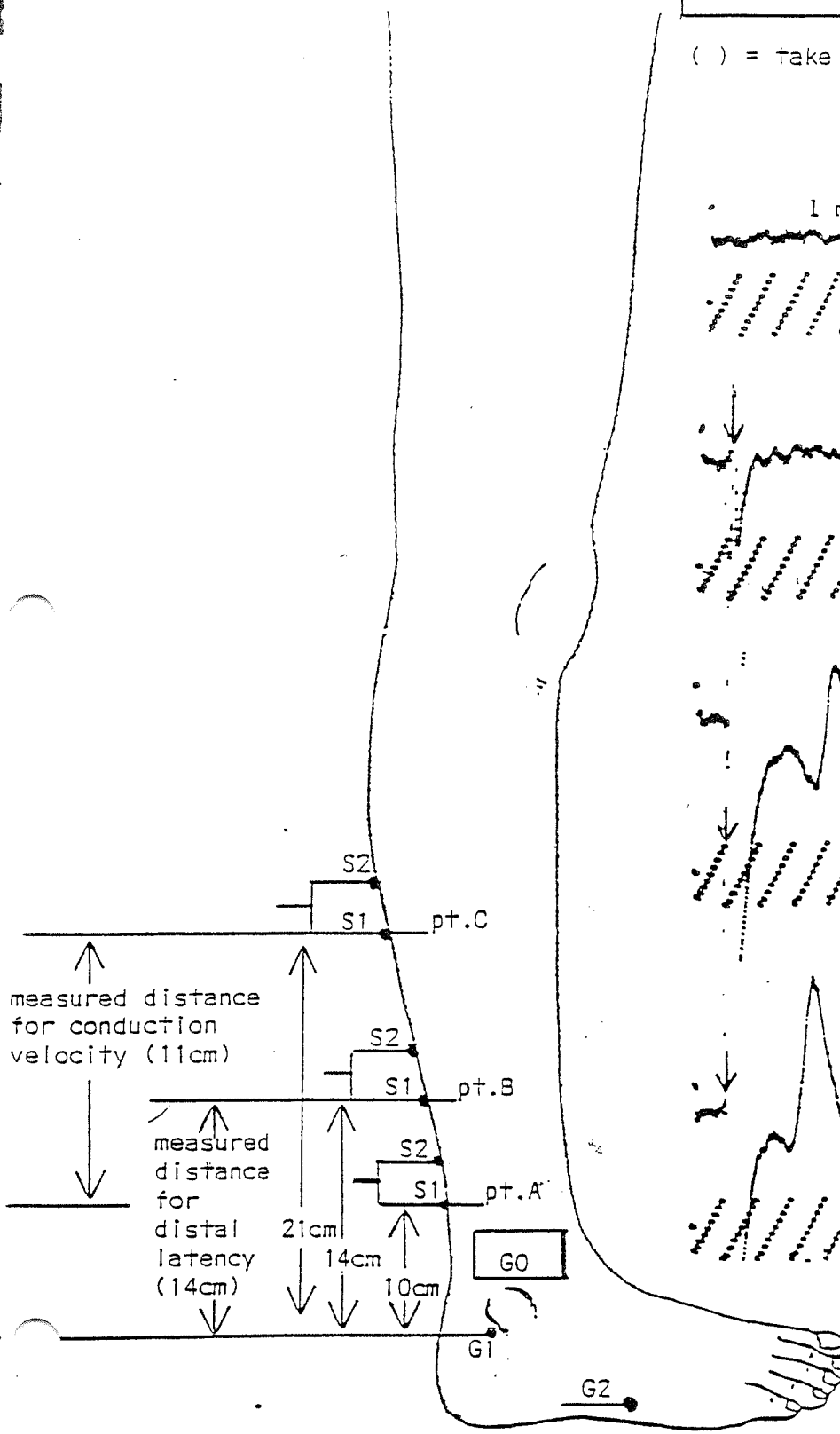
II. Equipment

- A. 2 disc electrodes (G1 active, G2 reference)
- B. 1 ground (G0)

age = 42

| Stimulation Site | Amp. μ v | Latency msec | Dist. cm | C.V. M/sec |
|------------------|--------------|----------------|----------|------------|
| pt.B | 18 | 3.4 | 14 | 48 |
| pt.C | 12 | (4.3) | 11 | |
| pt.A | 25 | (2.0) (2.5) | 10 | |

() = take off



- C. Bipolar stimulator (S1 cathode, S2 anode)
- III. Machine Settings
- Sweep speed (ms/div)—1 to 2
 - Gain (μv)—5 to 20
 - Filters—32(Hz), 1.6(KHz)
- IV. Electrode Placement
- G0 (ground)—lower portion of leg between G1 and distal S1.
 - G1 (active)—posterior to the lateral malleolus.
 - G2 (reference)—approximately 5 to 7 cm distal to G1 on the lateral side of the foot, proximal to the fifth metatarsal.
- V. Stimulation Sites* and Measurements
- Pt. B:
 - Stimulate—S1, 14 cm from G1 on the posterior portion of the calf.
 - Measure—distance from S1 to G1 in a straight line.
 - Pt. A:
 - Stimulate—S1, 10 cm from G1 on the posterior portion of the calf.
 - Measure—distance from S1 to G1 in a straight line.
 - Pt. C:
 - Stimulate—S1, 21 cm from G1 on the posterior portion of the calf.
 - Measure—distance from pt. C-S1 to pt. A-S1 in a straight line (usually 11.0 cm, at least 10 cm).
- VI. Calculations
- Distal Latency—Use pt. B and calculate from the shock artifact to the peak of the negative deflection.
 - Amplitude—Use pt. B and calculate from the peak of the initial positive deflection to the peak of the negative deflection.
 - Conduction Velocity—Using latencies measured to the takeoff pt. A and pt. C subtract the distal from the proximal latency, divide the difference into the distance between proximal-S1 and distal-S1, and multiply by 10.
- VII. Variations and Pitfalls
- Motor response may be mistaken for a sensory response—check response carefully.
 - Cold may cause a prolonged distal latency with a normal amplitude.
 - People over 65 years of age may not have an obtainable response and still be considered within normal limits if the same is true

*To find the stimulation sites draw a straight line between G1 and pt. C with pt. C being midportion of the calf and pts. A and B (slightly more anterior) on this line.

of the contralateral, uninvolved limb and a normal median or ulnar sensory conduction velocity is obtained.

VIII. Normal Values*

| AGE | AMPLITUDE μ v (Pt. B) | DISTAL LATENCY msec (Pt. B) | CONDUCTION VELOCITY m/sec (Pts. A and C) |
|-------|------------------------------|--------------------------------|---|
| 0-9 | 6-25 (16) | 2.3-3.6 (2.7) | 42-56 |
| 10-19 | 5-30 (15) | 2.6-4.3 (3.6) | " |
| 20-29 | 6-35 (14) | 2.3-4.4 (3.7) | " |
| 30-39 | 6-38 (14) | 3.0-4.4 (3.8) | " |
| 40-49 | 5-38 (12) | 2.7-4.6 (3.8) | " |
| 50-59 | 4-28 (11) | 2.9-4.6 (3.8) | " |
| 60-69 | 3-20 (9) | 3.0-4.6 (3.9) | " |
| 70- | 3-12 (8) | 3.5-4.6 (4.1) | 40-52 |

*Sural conduction velocity should (1) be in the normal range and (2) be the same or faster than the peroneal (EDB) motor conduction velocity.