Peripheral neuropathy (PN) may cause regional bone loss that may not be detected by lumbar spine or hip bone mineral density (BMD) assessments.

HYPOTHESIS
We tested two hypotheses: 1) People with diabetes mellitus (DM) and peripheral neuropathy (PN) with and without Charcot neuroarthropathy (CN) will have reduced BMD in the foot compared to the lumbar spine and hip of young healthy control (YHC) subjects. 2) People with DMPN and CN will have greater percentage of osteopenia/osteoporosis in the foot compared to YHC and DMPN.

PURPOSE
The purpose of this study is to determine regional BMD, related regional T-scores and WHO classification of normal osteopenia/osteoporosis in the lumbar spine, hip and calcaneus in a sample of young healthy control subjects and subjects with DM and peripheral neuropathy (PN) with and without acute Charcot neuroarthropathy (CN).

SUBJECTS
We studied 56 people:
- 16 young healthy control (YHC) subjects
  - Age: 27 ± 5 yrs, Sex: 8 M & 8 F, BMI: 25 ± 4
- 20 with DM and PN
  - Age: 58 ± 11 yrs, Sex: 9 M & 11 F, BMI: 32 ± 8
  - 2 – Type 1 DM; 18 – Type 2 DM
  - DM Duration: 14 ± 13 yrs
- 20 with DMPN and CN
  - Age: 55 ± 9 yrs, Sex: 10 M & 10 F, BMI: 37 ± 7
  - 3 – Type 1 DM; 14 – Type 2 DM; 3 – PN Only
  - DM Duration: 17 ± 10 yrs

RESULTS, cont.

CONCLUSIONS
Lumbar spine & hip DXA do not reflect PN- and CN-induced regional foot osteopenia/osteoporosis. A greater percentage of people were classified with osteopenia/osteoporosis in the calcaneus due to PN & CN compared to YHC and DMPN groups and in the DMPN group compared to YHC due to PN.

CLINICAL RELEVANCE
In people with DMPN with or without CN, foot BMD and related T-scores should be included in the BMD assessments to determine the presence of regional osteopenia/osteoporosis.