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# Morphological variation in the metatarsal bones of selected recent and pre-pastoral humans from South Africa

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**2006-03-23**
http://hdl.handle.net/10539/271

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## APPENDIX ONE

**Table A3.1:** Victorian British sample size, mean value, standard deviation and coefficient of variation. Data courtesy of R.S. Kidd.
* Next to a mean value indicates sufficient evidence to reject normality.

FEMALE GROUP

| METATARSAL 1 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 17 | 56.07 | 4.05 | 7.20 |
| Variable 2 | 18 | 25.78 | 2.98 | 11.54 |
| Variable 3 | 18 | 20.10* | 4.54 | 22.59 |
| Variable 4 | 17 | 18.63 | 2.00 | 10.75 |
| Variable 5 | 17 | 20.20 | 1.52 | 7.53 |
| Variable 6 | 18 | 11.75 | 1.03 | 8.73 |
| Variable 7 | 18 | 12.45 | 1.14 | 9.18 |

| METATARSAL 2 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 15 | 68.94 | 4.54 | 6.59 |
| Variable 2 | 15 | 18.65 | 1.31 | 7.03 |
| Variable 3 | 15 | 15.66 | 1.41 | 9.02 |
| Variable 4 | 15 | 13.74 | 1.41 | 10.27 |
| Variable 5 | 15 | 9.84 | 0.98 | 10.03 |
| Variable 6 | 15 | 7.74 | 0.76 | 9.77 |
| Variable 7 | 15 | 5.80 | 0.83 | 14.29 |

| METATARSAL 5 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 12 | 55.46 | 3.04 | 5.48 |
| Variable 2 | 12 | 63.05 | 3.34 | 5.29 |
| Variable 3 | 12 | 13.16 | 1.22 | 9.27 |
| Variable 4 | 12 | 18.70 | 2.14 | 11.45 |
| Variable 5 | 12 | 10.52 | 1.21 | 11.54 |
| Variable 6 | 12 | 9.51 | 1.34 | 14.05 |
| Variable 7 | 12 | 7.18 | 1.57 | 21.86 |
| Variable 8 | 12 | 7.11 | 1.28 | 18.04 |

MALE GROUP

| METATARSAL 1 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 18 | 59.89 | 4.57 | 7.63 |
| Variable 2 | 18 | 29.58 | 1.94 | 6.57 |
| Variable 3 | 18 | 20.20 | 2.07 | 10.26 |
| Variable 4 | 18 | 20.28 | 2.02 | 9.95 |
| Variable 5 | 18 | 20.95 | 1.64 | 7.84 |
| Variable 6 | 18 | 12.52 | 0.73 | 5.82 |
| Variable 7 | 18 | 13.70 | 1.32 | 9.61 |

| METATARSAL 2 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 12 | 71.66 | 5.69 | 7.94 |
| Variable 2 | 12 | 20.22 | 1.53 | 7.58 |
| Variable 3 | 12 | 16.58 | 1.48 | 8.93 |
| Variable 4 | 12 | 14.61 | 1.42 | 9.74 |
| Variable 5 | 12 | 10.21 | 0.85 | 8.34 |
| Variable 6 | 12 | 7.99 | 1.15 | 14.39 |
| Variable 7 | 12 | 5.80 | 1.17 | 20.23 |

| METATARSAL 5 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 17 | 57.46 | 3.50 | 6.09 |
| Variable 2 | 17 | 67.86 | 4.94 | 7.27 |
| Variable 3 | 17 | 14.20 | 1.63 | 11.52 |
| Variable 4 | 17 | 20.44 | 2.54 | 12.44 |
| Variable 5 | 17 | 12.72 | 1.50 | 11.78 |
| Variable 6 | 17 | 10.65 | 1.59 | 14.95 |
| Variable 7 | 16 | 6.92 | 1.41 | 20.32 |
| Variable 8 | 16 | 9.19 | 1.78 | 19.40 |

**Table A3.2:** Chimpanzee sample size, mean value, standard deviation and coefficient of variation. Data courtesy of R.S. Kidd.
* Next to a mean value indicates sufficient evidence to reject normality.

FEMALE GROUP

| METATARSAL 1 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 20 | 55.27 | 2.34 | 4.23 |
| Variable 2 | 20 | 20.84 | 1.12 | 5.35 |
| Variable 3 | 20 | 16.37 | 1.09 | 6.69 |
| Variable 4 | 20 | 13.99 | 0.87 | 6.23 |
| Variable 5 | 20 | 15.30 | 1.05 | 6.87 |
| Variable 6 | 20 | 8.51 | 0.53 | 6.23 |
| Variable 7 | 20 | 11.18 | 0.96 | 8.59 |
| METATARSAL 2 | N | Mean | Std Dev | CV |
| Variable 1 | 20 | 73.87* | 3.21 | 4.35 |
| Variable 2 | 20 | 15.07 | 1.02 | 6.74 |
| Variable 3 | 20 | 15.17 | 0.75 | 4.97 |
| Variable 4 | 20 | 13.96 | 0.98 | 7.04 |
| Variable 5 | 20 | 10.09 | 0.66 | 6.51 |
| Variable 6 | 20 | 8.37 | 0.79 | 9.48 |
| Variable 7 | 20 | 6.64 | 0.57 | 8.55 |
| METATARSAL 5 | N | Mean | Std Dev | CV |
| Variable 1 | 20 | 58.37 | 2.81 | 4.82 |
| Variable 2 | 20 | 66.09 | 3.14 | 4.75 |
| Variable 3 | 20 | 10.55 | 1.06 | 10.07 |
| Variable 4 | 20 | 16.82 | 1.52 | 9.06 |
| Variable 5 | 20 | 12.35 | 0.87 | 7.05 |
| Variable 6 | 20 | 8.21 | 0.90 | 10.99 |
| Variable 7 | 20 | 6.34 | 0.57 | 9.03 |
| Variable 8 | 20 | 5.67 | 0.54 | 9.59 |

MALE GROUP

| METATARSAL 1 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 19 | 56.54 | 2.21 | 3.93 |
| Variable 2 | 19 | 22.29 | 1.14 | 5.11 |
| Variable 3 | 19 | 17.26 | 1.04 | 6.03 |
| Variable 4 | 19 | 14.92 | 0.93 | 6.26 |
| Variable 5 | 19 | 16.16 | 0.96 | 5.93 |
| Variable 6 | 19 | 9.25 | 0.63 | 6.84 |
| Variable 7 | 19 | 11.75 | 0.98 | 8.38 |

| METATARSAL 2 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 19 | 76.04 | 2.99 | 3.94 |
| Variable 2 | 19 | 16.01 | 1.12 | 7.00 |
| Variable 3 | 19 | 16.46 | 0.87 | 5.27 |
| Variable 4 | 19 | 14.66 | 0.76 | 5.16 |
| Variable 5 | 19 | 10.72* | 0.74 | 6.89 |
| Variable 6 | 19 | 8.61 | 0.51 | 5.91 |
| Variable 7 | 19 | 7.01 | 0.34 | 4.92 |

| METATARSAL 5 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 19 | 61.24 | 2.89 | 4.72 |
| Variable 2 | 19 | 69.22 | 4.11 | 5.95 |
| Variable 3 | 19 | 11.26 | 0.71 | 6.28 |
| Variable 4 | 19 | 18.36 | 1.39 | 7.57 |
| Variable 5 | 19 | 13.35 | 0.89 | 6.64 |
| Variable 6 | 19 | 8.61 | 0.79 | 9.24 |
| Variable 7 | 19 | 6.51 | 0.49 | 7.54 |
| Variable 8 | 19 | 6.26 | 0.54 | 8.64 |

**Table A3.3:** Gorilla sample size, mean value, standard deviation and coefficient of variation. Data courtesy of R.S. Kidd.
* Next to a mean value indicates sufficient evidence to reject normality.

FEMALE GROUP

| METATARSAL 1 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 20 | 55.63 | 3.19 | 5.74 |
| Variable 2 | 20 | 24.53* | 1.31 | 5.32 |
| Variable 3 | 20 | 18.46 | 0.89 | 4.82 |
| Variable 4 | 20 | 15.01* | 1.33 | 8.87 |
| Variable 5 | 20 | 17.20 | 1.14 | 6.63 |
| Variable 6 | 20 | 8.96 | 0.82 | 9.12 |
| Variable 7 | 20 | 12.20 | 0.74 | 6.07 |

| METATARSAL 2 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 20 | 74.49 | 4.10 | 5.50 |
| Variable 2 | 20 | 18.72 | 1.60 | 8.54 |
| Variable 3 | 20 | 17.37 | 1.09 | 6.25 |
| Variable 4 | 20 | 15.75 | 1.07 | 6.82 |
| Variable 5 | 20 | 11.19 | 0.72 | 6.42 |
| Variable 6 | 20 | 9.99 | 0.83 | 8.29 |
| Variable 7 | 20 | 7.68 | 0.57 | 7.46 |

| METATARSAL 5 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 20 | 64.56 | 3.63 | 5.62 |
| Variable 2 | 20 | 73.59 | 4.01 | 5.45 |
| Variable 3 | 20 | 13.35 | 1.24 | 9.30 |
| Variable 4 | 20 | 19.40 | 1.35 | 6.95 |
| Variable 5 | 20 | 14.27 | 0.91 | 6.36 |
| Variable 6 | 20 | 9.26* | 0.74 | 7.93 |
| Variable 7 | 20 | 7.59 | 0.58 | 7.60 |
| Variable 8 | 20 | 5.89 | 0.47 | 7.98 |

MALE GROUP

| METATARSAL 1 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 20 | 67.64 | 3.49 | 5.15 |
| Variable 2 | 20 | 30.37 | 1.63 | 5.36 |
| Variable 3 | 20 | 23.13 | 1.78 | 7.69 |
| Variable 4 | 20 | 18.77 | 1.53 | 8.13 |
| Variable 5 | 20 | 22.23 | 2.01 | 9.06 |
| Variable 6 | 20 | 10.84 | 0.94 | 8.648 |
| Variable 7 | 20 | 15.94 | 1.46 | 9.17 |

| METATARSAL 2 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 20 | 87.54 | 4.32 | 4.93 |
| Variable 2 | 20 | 24.57 | 1.70 | 6.92 |
| Variable 3 | 20 | 21.45 | 1.59 | 7.42 |
| Variable 4 | 20 | 18.96 | 1.61 | 8.48 |
| Variable 5 | 20 | 14.56* | 1.49 | 10.20 |
| Variable 6 | 20 | 13.31 | 1.20 | 8.99 |
| Variable 7 | 20 | 9.34 | 0.81 | 8.66 |

| METATARSAL 5 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 20 | 76.23 | 4.42 | 5.80 |
| Variable 2 | 20 | 88.14 | 4.09 | 4.65 |
| Variable 3 | 20 | 17.37 | 1.69 | 9.75 |
| Variable 4 | 20 | 25.82* | 1.88 | 7.28 |
| Variable 5 | 20 | 16.91 | 1.92 | 11.36 |
| Variable 6 | 20 | 11.25 | 0.93 | 8.23 |
| Variable 7 | 19 | 9.65 | 0.88 | 9.17 |
| Variable 8 | 20 | 7.49 | 0.62 | 8.28 |

**Table A3.4:** Orang-utan sample size, mean value, standard deviation and coefficient of variation. Data courtesy of R.S. Kidd.
* Next to a mean value indicates sufficient evidence to reject normality.

FEMALE GROUP

| METATARSAL 1 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 16 | 43.12 | 3.61 | 8.37 |
| Variable 2 | 16 | 16.34* | 2.90 | 17.77 |
| Variable 3 | 16 | 12.37 | 0.83 | 6.76 |
| Variable 4 | 16 | 9.12 | 0.76 | 8.40 |
| Variable 5 | 16 | 12.97* | 1.79 | 13.84 |
| Variable 6 | 16 | 6.34 | 0.58 | 9.18 |
| Variable 7 | 16 | 7.23 | 0.58 | 8.09 |
| METATARSAL 2 | N | Mean | Std Dev | CV |
| Variable 1 | 16 | 90.12 | 4.06 | 4.51 |
| Variable 2 | 16 | 15.01 | 1.29 | 8.58 |
| Variable 3 | 16 | 14.28 | 1.50 | 10.52 |
| Variable 4 | 16 | 15.33 | 0.86 | 5.62 |
| Variable 5 | 16 | 11.66 | 0.66 | 5.64 |
| Variable 6 | 16 | 8.11 | 0.97 | 11.94 |
| Variable 7 | 16 | 6.05 | 0.51 | 8.44 |
| METATARSAL 5 | N | Mean | Std Dev | CV |
| Variable 1 | 16 | 74.50 | 4.15 | 5.57 |
| Variable 2 | 16 | 79.81* | 4.72 | 5.91 |
| Variable 3 | 16 | 11.05 | 1.26 | 11.38 |
| Variable 4 | 16 | 13.78 | 1.21 | 8.78 |
| Variable 5 | 16 | 13.86 | 0.88 | 6.37 |
| Variable 6 | 16 | 9.63 | 0.79 | 8.24 |
| Variable 7 | 16 | 5.94 | 0.44 | 7.46 |
| Variable 8 | 16 | 6.38 | 0.53 | 8.30 |

MALE GROUP

| METATARSAL 1 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 11 | 49.21 | 5.61 | 11.40 |
| Variable 2 | 11 | 19.34 | 3.03 | 15.68 |
| Variable 3 | 11 | 14.76 | 0.98 | 6.65 |
| Variable 4 | 11 | 10.98 | 1.18 | 10.71 |
| Variable 5 | 11 | 15.39 | 1.56 | 10.16 |
| Variable 6 | 11 | 8.01 | 1.59 | 19.79 |
| Variable 7 | 11 | 8.78 | 0.89 | 10.18 |

| METATARSAL 2 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 11 | 102.80 | 8.36 | 8.13 |
| Variable 2 | 11 | 18.25 | 1.75 | 9.58 |
| Variable 3 | 11 | 17.40 | 2.35 | 13.48 |
| Variable 4 | 11 | 18.38 | 1.81 | 9.87 |
| Variable 5 | 11 | 12.16* | 2.67 | 21.96 |
| Variable 6 | 11 | 9.37 | 1.07 | 11.43 |
| Variable 7 | 11 | 7.21 | 1.01 | 14.04 |

| METATARSAL 5 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 11 | 85.13 | 8.19 | 9.62 |
| Variable 2 | 11 | 91.56 | 8.23 | 8.99 |
| Variable 3 | 11 | 13.11 | 1.97 | 15.03 |
| Variable 4 | 11 | 17.22 | 2.42 | 14.08 |
| Variable 5 | 11 | 17.68* | 1.54 | 8.73 |
| Variable 6 | 11 | 11.42 | 1.38 | 12.08 |
| Variable 7 | 11 | 7.30 | 0.92 | 12.63 |
| Variable 8 | 11 | 7.53 | 0.99 | 13.22 |

**Table A4.1:** Sotho sample size, mean value, standard deviation and coefficient of variation.
* Next to a mean value indicates sufficient evidence to reject normality.

FEMALE GROUP

| METATARSAL 1 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 57.61 | 3.62 | 6.28 |
| Variable 2 | 30 | 25.73 | 1.67 | 6.51 |
| Variable 3 | 30 | 15.71* | 1.69 | 10.73 |
| Variable 4 | 30 | 18.18 | 1.25 | 6.85 |
| Variable 5 | 30 | 19.38 | 1.27 | 6.54 |
| Variable 6 | 30 | 17.08 | 1.30 | 7.63 |
| Variable 7 | 30 | 19.35 | 1.26 | 6.53 |
| Variable 8 | 30 | 12.72 | 1.00 | 7.89 |
| Variable 9 | 30 | 12.77 | 1.22 | 9.58 |

| METATARSAL 2 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 72.34 | 4.42 | 6.11 |
| Variable 2 | 30 | 70.01 | 4.34 | 6.19 |
| Variable 3 | 30 | 69.63 | 4.77 | 6.85 |
| Variable 4 | 30 | 18.00 | 1.17 | 6.48 |
| Variable 5 | 30 | 12.71 | 1.20 | 9.46 |
| Variable 6 | 30 | 14.61 | 1.05 | 7.19 |
| Variable 7 | 30 | 9.74 | 0.74 | 7.64 |
| Variable 8 | 30 | 9.50 | 0.78 | 8.23 |
| Variable 9 | 30 | 9.46 | 0.84 | 8.85 |
| Variable 10 | 30 | 8.71 | 0.82 | 9.41 |
| Variable 11 | 30 | 7.31 | 0.74 | 10.11 |

| METATARSAL 3 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 68.41 | 4.44 | 6.50 |
| Variable 2 | 30 | 66.79 | 4.42 | 6.62 |
| Variable 3 | 30 | 67.07 | 4.27 | 6.37 |
| Variable 4 | 30 | 18.26 | 1.43 | 7.85 |
| Variable 5 | 30 | 12.11 | 1.06 | 8.79 |
| Variable 6 | 30 | 14.01 | 0.94 | 6.70 |
| Variable 7 | 30 | 8.75 | 0.73 | 8.35 |
| Variable 8 | 30 | 8.47 | 0.67 | 7.89 |
| Variable 9 | 30 | 8.61 | 0.75 | 8.71 |
| Variable 10 | 30 | 7.64 | 0.65 | 8.52 |
| Variable 11 | 30 | 8.10 | 0.75 | 9.22 |

| METATARSAL 4 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 66.95 | 4.62 | 6.90 |
| Variable 2 | 30 | 65.70 | 4.53 | 6.89 |
| Variable 3 | 30 | 64.10 | 4.34 | 6.77 |
| Variable 4 | 30 | 16.14 | 1.49 | 9.21 |
| Variable 5 | 30 | 10.51 | 1.03 | 9.84 |
| Variable 6 | 30 | 12.96 | 1.01 | 7.81 |
| Variable 7 | 30 | 8.39 | 0.62 | 7.36 |

| | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 8 | 30 | 8.12 | 0.63 | 7.76 |
| Variable 9 | 30 | 8.23 | 0.69 | 8.34 |
| Variable 10 | 30 | 8.11 | 0.79 | 9.70 |
| Variable 11 | 30 | 8.77 | 0.66 | 7.55 |

| METATARSAL 5 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 66.04 | 5.11 | 7.74 |
| Variable 2 | 30 | 64.17 | 4.76 | 7.42 |
| Variable 3 | 30 | 58.17 | 4.18 | 7.18 |
| Variable 4 | 30 | 12.51 | 1.34 | 10.70 |
| Variable 5 | 30 | 13.04 | 1.72 | 13.17 |
| Variable 6 | 30 | 18.61 | 1.61 | 8.63 |
| Variable 7 | 30 | 11.72 | 0.93 | 7.96 |
| Variable 8 | 30 | 8.59 | 1.02 | 11.90 |
| Variable 9 | 30 | 7.49 | 0.87 | 11.96 |
| Variable 10 | 30 | 8.57 | 0.02 | 11.08 |
| Variable 11 | 30 | 7.64 | 0.90 | 8.93 |
| Variable 12 | 30 | 10.14 | 0.90 | 6.05 |

MALE GROUP

| METATARSAL 1 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 61.25 | 3.70 | 6.05 |
| Variable 2 | 30 | 28.21 | 1.39 | 4.94 |
| Variable 3 | 30 | 17.96* | 1.57 | 8.74 |
| Variable 4 | 30 | 19.50 | 1.31 | 6.73 |
| Variable 5 | 30 | 21.83 | 1.39 | 6.39 |
| Variable 6 | 30 | 19.74 | 1.43 | 7.25 |
| Variable 7 | 30 | 21.79 | 1.41 | 6.49 |
| Variable 8 | 30 | 14.14 | 0.94 | 6.67 |
| Variable 9 | 30 | 14.28* | 0.98 | 6.86 |

| METATARSAL 2 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 77.46 | 4.55 | 5.87 |
| Variable 2 | 30 | 74.68 | 4.57 | 6.13 |
| Variable 3 | 30 | 74.66 | 4.28 | 5.73 |
| Variable 4 | 30 | 19.87 | 1.22 | 6.12 |
| Variable 5 | 30 | 13.65 | 1.20 | 8.83 |
| Variable 6 | 30 | 15.91 | 1.27 | 8.01 |
| Variable 7 | 30 | 10.78 | 0.77 | 7.15 |
| Variable 8 | 30 | 10.60 | 0.73 | 6.86 |
| Variable 9 | 30 | 10.54 | 0.89 | 8.41 |
| Variable 10 | 30 | 9.22 | 0.83 | 8.96 |
| Variable 11 | 30 | 8.09 | 0.90 | 11.15 |

| METATARSAL 3 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 72.82 | 4.59 | 6.30 |
| Variable 2 | 30 | 70.72 | 4.69 | 6.63 |
| Variable 3 | 30 | 71.04 | 4.56 | 6.42 |
| Variable 4 | 30 | 19.64* | 1.15 | 5.87 |
| Variable 5 | 30 | 13.63 | 1.03 | 7.53 |
| Variable 6 | 30 | 15.20 | 1.18 | 7.79 |
| Variable 7 | 30 | 9.61 | 0.66 | 6.89 |
| Variable 8 | 30 | 9.34 | 0.62 | 6.68 |
| Variable 9 | 30 | 9.32 | 0.92 | 9.87 |
| Variable 10 | 30 | 8.44 | 0.68 | 8.10 |
| Variable 11 | 30 | 8.89 | 0.63 | 7.09 |

| METATARSAL 4 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 70.91 | 4.45 | 6.28 |
| Variable 2 | 30 | 69.12 | 4.66 | 6.74 |
| Variable 3 | 30 | 67.42* | 4.44 | 6.59 |
| Variable 4 | 30 | 17.58 | 1.26 | 7.20 |
| Variable 5 | 30 | 11.72 | 1.06 | 9.06 |
| Variable 6 | 30 | 14.35 | 0.97 | 6.75 |
| Variable 7 | 30 | 9.52 | 0.99 | 10.42 |
| Variable 8 | 30 | 8.97 | 0.78 | 8.75 |
| Variable 9 | 30 | 9.44 | 1.05 | 11.09 |
| Variable 10 | 30 | 9.10 | 0.89 | 9.83 |
| Variable 11 | 30 | 9.61 | 0.70 | 7.28 |

| METATARSAL 5 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 70.52 | 4.97 | 7.05 |
| Variable 2 | 30 | 68.70 | 4.76 | 6.92 |
| Variable 3 | 30 | 61.01 | 4.17 | 6.84 |
| Variable 4 | 30 | 13.82 | 1.12 | 8.08 |
| Variable 5 | 30 | 14.70 | 1.78 | 12.08 |
| Variable 6 | 30 | 20.56 | 1.84 | 8.96 |
| Variable 7 | 30 | 13.15 | 1.12 | 8.51 |
| Variable 8 | 30 | 9.83* | 1.16 | 11.80 |
| Variable 9 | 30 | 8.59 | 0.80 | 9.36 |
| Variable 10 | 30 | 9.82* | 1.17 | 11.87 |
| Variable 11 | 30 | 8.52 | 0.72 | 8.41 |
| Variable 12 | 30 | 11.11 | 0.93 | 8.38 |

**Table A4.2:** Zulu sample size, mean value, standard deviation and coefficient of variation.
* Next to a mean value indicates sufficient evidence to reject normality.

FEMALE GROUP

| METATARSAL 1 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 57.64 | 2.94 | 5.11 |
| Variable 2 | 30 | 26.11 | 1.46 | 5.58 |
| Variable 3 | 30 | 15.68 | 1.38 | 8.84 |
| Variable 4 | 30 | 18.14 | 1.59 | 8.75 |
| Variable 5 | 30 | 19.11 | 1.26 | 6.58 |
| Variable 6 | 30 | 17.11 | 1.18 | 6.90 |
| Variable 7 | 30 | 18.95 | 1.24 | 6.57 |
| Variable 8 | 30 | 12.98 | 1.04 | 8.02 |
| Variable 9 | 30 | 12.38 | 1.10 | 8.85 |

| METATARSAL 2 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 71.62 | 3.00 | 4.19 |
| Variable 2 | 30 | 69.51 | 2.84 | 4.08 |
| Variable 3 | 30 | 69.52 | 2.92 | 4.21 |
| Variable 4 | 30 | 18.72 | 1.47 | 7.88 |
| Variable 5 | 30 | 13.02 | 1.15 | 8.88 |
| Variable 6 | 30 | 14.61 | 1.01 | 6.95 |
| Variable 7 | 30 | 9.77 | 0.63 | 6.50 |
| Variable 8 | 30 | 9.40 | 0.64 | 6.81 |
| Variable 9 | 30 | 9.52 | 0.63 | 6.62 |
| Variable 10 | 30 | 8.98 | 0.83 | 9.24 |
| Variable 11 | 30 | 7.98 | 0.95 | 11.93 |

| METATARSAL 3 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 68.72 | 3.16 | 4.60 |
| Variable 2 | 30 | 66.73 | 3.52 | 5.28 |
| Variable 3 | 30 | 67.08 | 3.44 | 5.12 |
| Variable 4 | 30 | 18.63 | 1.66 | 8.93 |
| Variable 5 | 30 | 12.59 | 1.10 | 8.70 |
| Variable 6 | 30 | 14.08 | 0.96 | 6.84 |
| Variable 7 | 30 | 8.61 | 0.80 | 9.34 |
| Variable 8 | 30 | 8.21 | 0.65 | 7.96 |
| Variable 9 | 30 | 8.42 | 0.79 | 9.37 |
| Variable 10 | 30 | 8.20 | 1.04 | 12.69 |
| Variable 11 | 30 | 8.57 | 0.80 | 9.37 |

| METATARSAL 4 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 66.93 | 3.13 | 4.68 |
| Variable 2 | 30 | 65.56 | 3.21 | 4.88 |
| Variable 3 | 30 | 63.93 | 3.34 | 5.23 |
| Variable 4 | 30 | 16.45 | 1.47 | 8.92 |
| Variable 5 | 30 | 11.00 | 0.97 | 8.85 |
| Variable 6 | 30 | 12.98 | 0.79 | 6.06 |

| | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 7 | 30 | 8.47 | 0.58 | 6.82 |
| Variable 8 | 30 | 7.96* | 0.68 | 8.54 |
| Variable 9 | 30 | 8.30 | 0.61 | 7.34 |
| Variable 10 | 30 | 8.59 | 1.00 | 11.70 |
| Variable 11 | 30 | 9.22 | 0.87 | 9.46 |

| METATARSAL 5 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 66.12 | 5.91 | 8.94 |
| Variable 2 | 30 | 64.54 | 3.38 | 5.24 |
| Variable 3 | 30 | 58.69 | 3.39 | 5.78 |
| Variable 4 | 30 | 12.35* | 1.17 | 9.49 |
| Variable 5 | 30 | 13.23 | 1.77 | 13.38 |
| Variable 6 | 30 | 18.30 | 1.74 | 9.51 |
| Variable 7 | 30 | 11.38 | 1.19 | 10.43 |
| Variable 8 | 30 | 8.27 | 0.95 | 11.49 |
| Variable 9 | 30 | 7.36 | 0.87 | 11.86 |
| Variable 10 | 30 | 8.10 | 0.74 | 9.10 |
| Variable 11 | 30 | 7.63 | 0.74 | 9.66 |
| Variable 12 | 30 | 10.59 | 0.86 | 8.11 |

MALE GROUP

| METATARSAL 1 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 61.99 | 3.96 | 6.39 |
| Variable 2 | 30 | 27.87 | 1.70 | 6.11 |
| Variable 3 | 30 | 18.59 | 1.53 | 8.23 |
| Variable 4 | 30 | 19.37 | 1.12 | 5.80 |
| Variable 5 | 30 | 21.24 | 1.70 | 8.02 |
| Variable 6 | 30 | 19.29 | 1.74 | 9.04 |
| Variable 7 | 30 | 21.30 | 1.50 | 7.03 |
| Variable 8 | 30 | 14.29 | 1.19 | 8.32 |
| Variable 9 | 30 | 14.46 | 1.09 | 7.57 |

| METATARSAL 2 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 78.13* | 5.29 | 6.77 |
| Variable 2 | 30 | 75.07* | 5.10 | 6.79 |
| Variable 3 | 30 | 75.78* | 5.17 | 6.82 |
| Variable 4 | 30 | 19.80 | 1.43 | 7.24 |
| Variable 5 | 30 | 13.80 | 1.21 | 8.80 |
| Variable 6 | 30 | 15.72 | 0.96 | 6.11 |
| Variable 7 | 30 | 10.71 | 1.02 | 9.48 |
| Variable 8 | 30 | 10.26 | 0.95 | 9.25 |
| Variable 9 | 30 | 10.51 | 1.05 | 10.02 |
| Variable 10 | 30 | 9.46 | 1.26 | 13.38 |
| Variable 11 | 30 | 8.34 | 0.78 | 9.37 |

| METATARSAL 3 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 73.36* | 5.12 | 6.97 |
| Variable 2 | 30 | 71.06* | 5.33 | 7.49 |
| Variable 3 | 30 | 71.74* | 5.09 | 7.09 |
| Variable 4 | 30 | 19.82 | 1.77 | 8.94 |
| Variable 5 | 30 | 13.38 | 1.05 | 7.85 |
| Variable 6 | 30 | 14.53 | 0.92 | 6.36 |
| Variable 7 | 30 | 9.41 | 0.84 | 8.95 |
| Variable 8 | 30 | 9.05 | 0.77 | 8.56 |
| Variable 9 | 30 | 9.12 | 1.03 | 11.32 |
| Variable 10 | 30 | 8.75 | 0.86 | 9.88 |
| Variable 11 | 30 | 9.07 | 0.80 | 8.80 |

| METATARSAL 4 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 71.50 | 5.11 | 7.15 |
| Variable 2 | 30 | 69.40 | 5.36 | 7.72 |
| Variable 3 | 30 | 67.08 | 6.33 | 9.43 |
| Variable 4 | 30 | 17.60 | 1.66 | 9.46 |
| Variable 5 | 30 | 11.54 | 1.17 | 10.17 |
| Variable 6 | 30 | 13.79 | 0.98 | 7.12 |
| Variable 7 | 30 | 9.31 | 0.81 | 8.67 |
| Variable 8 | 30 | 8.80 | 0.72 | 8.28 |
| Variable 9 | 30 | 9.06 | 0.89 | 9.79 |
| Variable 10 | 30 | 9.33 | 0.93 | 9.95 |
| Variable 11 | 30 | 9.83 | 0.82 | 8.38 |

| METATARSAL 5 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 70.10 | 4.24 | 6.04 |
| Variable 2 | 30 | 68.35 | 4.66 | 6.82 |
| Variable 3 | 30 | 61.53 | 4.74 | 7.70 |
| Variable 4 | 30 | 13.67 | 1.32 | 9.67 |
| Variable 5 | 30 | 14.22 | 1.68 | 11.83 |
| Variable 6 | 30 | 20.28 | 1.86 | 9.15 |
| Variable 7 | 30 | 12.35 | 1.25 | 10.09 |
| Variable 8 | 30 | 9.48 | 1.11 | 11.72 |
| Variable 9 | 30 | 7.88 | 0.90 | 11.38 |
| Variable 10 | 30 | 9.42 | 1.26 | 13.37 |
| Variable 11 | 30 | 8.60 | 0.87 | 10.15 |
| Variable 12 | 30 | 11.03 | 0.81 | 7.31 |

**Table A4.3:** European sample size, mean value, standard deviation and coefficient of variation.
* Next to a mean value indicates sufficient evidence to reject normality.

FEMALE GROUP

| METATARSAL 1 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 59.34 | 3.80 | 6.40 |
| Variable 2 | 30 | 27.63 | 1.78 | 6.43 |
| Variable 3 | 30 | 15.36 | 1.36 | 8.84 |
| Variable 4 | 30 | 19.71 | 1.80 | 9.12 |
| Variable 5 | 30 | 21.15 | 1.84 | 8.69 |
| Variable 6 | 30 | 19.26 | 2.08 | 10.79 |
| Variable 7 | 30 | 21.03 | 1.79 | 8.51 |
| Variable 8 | 30 | 12.91 | 1.17 | 9.11 |
| Variable 9 | 30 | 11.78 | 1.06 | 9.00 |

| METATARSAL 2 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 73.94 | 4.57 | 6.19 |
| Variable 2 | 30 | 71.71 | 4.53 | 6.31 |
| Variable 3 | 30 | 71.32 | 4.47 | 6.27 |
| Variable 4 | 30 | 18.89 | 1.13 | 5.98 |
| Variable 5 | 30 | 13.38 | 0.99 | 7.38 |
| Variable 6 | 30 | 15.17 | 1.08 | 7.12 |
| Variable 7 | 30 | 10.01 | 0.73 | 7.25 |
| Variable 8 | 30 | 9.91 | 0.71 | 7.12 |
| Variable 9 | 30 | 9.61 | 0.85 | 8.89 |
| Variable 10 | 30 | 8.35 | 0.98 | 11.80 |
| Variable 11 | 30 | 7.57 | 0.92 | 12.19 |

| METATARSAL 3 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 68.48 | 4.43 | 6.47 |
| Variable 2 | 30 | 66.84 | 4.38 | 6.56 |
| Variable 3 | 30 | 67.56 | 4.51 | 6.67 |
| Variable 4 | 30 | 17.95 | 0.99 | 5.50 |
| Variable 5 | 30 | 12.39 | 1.07 | 8.64 |
| Variable 6 | 30 | 14.35 | 1.08 | 7.53 |
| Variable 7 | 30 | 8.65 | 0.63 | 7.32 |
| Variable 8 | 30 | 8.55 | 0.68 | 7.96 |
| Variable 9 | 30 | 8.61* | 1.96 | 22.63 |
| Variable 10 | 30 | 7.06 | 0.63 | 8.93 |
| Variable 11 | 30 | 7.42 | 0.89 | 12.03 |

| METATARSAL 4 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 66.77 | 4.33 | 6.49 |
| Variable 2 | 30 | 65.29 | 4.42 | 6.77 |
| Variable 3 | 30 | 63.66 | 4.55 | 7.15 |
| Variable 4 | 30 | 15.53 | 1.32 | 8.52 |
| Variable 5 | 30 | 11.00 | 0.92 | 8.41 |
| Variable 6 | 30 | 13.63 | 0.92 | 6.76 |

| | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 7 | 30 | 8.76 | 0.55 | 6.30 |
| Variable 8 | 30 | 8.45 | 0.67 | 7.90 |
| Variable 9 | 30 | 8.44 | 0.70 | 8.29 |
| Variable 10 | 30 | 6.97 | 0.53 | 7.63 |
| Variable 11 | 30 | 8.57 | 0.87 | 10.15 |

| METATARSAL 5 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 66.70* | 10.77 | 16.15 |
| Variable 2 | 30 | 66.54 | 4.85 | 7.29 |
| Variable 3 | 30 | 59.33 | 4.54 | 7.64 |
| Variable 4 | 30 | 12.59 | 1.06 | 8.46 |
| Variable 5 | 30 | 14.86 | 1.98 | 13.30 |
| Variable 6 | 30 | 19.39 | 2.22 | 11.44 |
| Variable 7 | 30 | 12.01 | 1.11 | 9.27 |
| Variable 8 | 30 | 8.99* | 0.89 | 9.92 |
| Variable 9 | 30 | 8.13 | 0.79 | 9.73 |
| Variable 10 | 30 | 8.78* | 0.93 | 10.59 |
| Variable 11 | 30 | 7.17* | 0.65 | 9.08 |
| Variable 12 | 30 | 9.75 | 1.16 | 11.86 |

MALE GROUP

| METATARSAL 1 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 63.13 | 3.75 | 5.94 |
| Variable 2 | 30 | 29.98* | 1.86 | 6.20 |
| Variable 3 | 30 | 17.28 | 1.50 | 8.68 |
| Variable 4 | 30 | 21.65* | 2.15 | 9.92 |
| Variable 5 | 30 | 22.41 | 1.47 | 6.58 |
| Variable 6 | 30 | 20.36 | 1.38 | 6.77 |
| Variable 7 | 30 | 22.33 | 1.55 | 6.94 |
| Variable 8 | 30 | 14.13 | 1.14 | 8.04 |
| Variable 9 | 30 | 13.45 | 1.31 | 9.77 |

| METATARSAL 2 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 79.25 | 3.65 | 4.60 |
| Variable 2 | 30 | 76.42 | 4.21 | 5.51 |
| Variable 3 | 30 | 76.15 | 4.08 | 5.36 |
| Variable 4 | 30 | 20.41 | 1.27 | 6.23 |
| Variable 5 | 30 | 14.77 | 1.41 | 1.41 |
| Variable 6 | 30 | 16.46 | 0.93 | 5.66 |
| Variable 7 | 30 | 11.04 | 0.76 | 6.92 |
| Variable 8 | 30 | 11.01 | 0.78 | 7.05 |
| Variable 9 | 30 | 10.49* | 0.77 | 7.35 |
| Variable 10 | 30 | 9.33 | 0.97 | 9.33 |
| Variable 11 | 30 | 8.12 | 0.95 | 11.68 |

| METATARSAL 3 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 73.31 | 3.61 | 4.93 |
| Variable 2 | 30 | 71.02 | 3.96 | 5.57 |
| Variable 3 | 30 | 71.70 | 4.04 | 5.64 |
| Variable 4 | 30 | 19.95 | 0.87 | 4.38 |
| Variable 5 | 30 | 13.79 | 0.70 | 5.06 |
| Variable 6 | 30 | 15.96 | 0.88 | 5.49 |
| Variable 7 | 30 | 9.61 | 0.72 | 7.52 |
| Variable 8 | 30 | 9.53 | 0.76 | 8.02 |
| Variable 9 | 30 | 9.13 | 0.61 | 6.71 |
| Variable 10 | 30 | 8.19 | 0.74 | 9.02 |
| Variable 11 | 30 | 8.78 | 0.85 | 9.64 |

| METATARSAL 4 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 71.79 | 3.81 | 5.31 |
| Variable 2 | 30 | 70.04 | 3.73 | 5.32 |
| Variable 3 | 30 | 68.04 | 3.73 | 5.48 |
| Variable 4 | 30 | 17.08 | 1.12 | 6.57 |
| Variable 5 | 30 | 11.62 | 1.10 | 9.44 |
| Variable 6 | 30 | 14.97 | 0.69 | 4.63 |
| Variable 7 | 30 | 9.72 | 0.69 | 7.12 |
| Variable 8 | 30 | 9.50 | 0.74 | 7.78 |
| Variable 9 | 30 | 9.37 | 0.67 | 7.19 |
| Variable 10 | 30 | 8.14 | 0.88 | 10.86 |
| Variable 11 | 30 | 9.72 | 0.79 | 8.12 |

| METATARSAL 5 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 30 | 73.97 | 4.53 | 6.12 |
| Variable 2 | 30 | 71.23 | 4.04 | 5.67 |
| Variable 3 | 30 | 62.91 | 3.53 | 5.61 |
| Variable 4 | 30 | 14.27 | 1.03 | 7.20 |
| Variable 5 | 30 | 15.88* | 2.32 | 14.64 |
| Variable 6 | 30 | 21.35* | 2.09 | 9.77 |
| Variable 7 | 30 | 13.52 | 1.13 | 8.35 |
| Variable 8 | 30 | 10.00 | 1.04 | 10.43 |
| Variable 9 | 30 | 9.11* | 0.70 | 7.69 |
| Variable 10 | 30 | 9.89 | 1.07 | 10.80 |
| Variable 11 | 30 | 8.49 | 0.69 | 8.16 |
| Variable 12 | 30 | 11.56 | 1.17 | 10.12 |

**Table A4.4:** Pre-pastoral sample size, mean value, standard deviation and coefficient of variation.
* Next to a mean value indicates sufficient evidence to reject normality.

FEMALE GROUP

| METATARSAL 1 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 9 | 52.36 | 5.05 | 9.65 |
| Variable 2 | 9 | 23.90 | 2.44 | 10.21 |
| Variable 3 | 9 | 14.39 | 1.85 | 12.83 |
| Variable 4 | 9 | 16.72 | 1.70 | 10.20 |
| Variable 5 | 9 | 17.99* | 2.68 | 14.92 |
| Variable 6 | 9 | 16.36 | 1.97 | 12.06 |
| Variable 7 | 9 | 17.96 | 2.70 | 15.02 |
| Variable 8 | 9 | 11.90 | 1.30 | 10.92 |
| Variable 9 | 9 | 11.74 | 1.51 | 12.89 |

| METATARSAL 2 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 8 | 65.49 | 6.14 | 9.38 |
| Variable 2 | 8 | 63.21 | 5.86 | 9.28 |
| Variable 3 | 8 | 62.60* | 6.12 | 9.77 |
| Variable 4 | 8 | 17.07 | 1.45 | 8.51 |
| Variable 5 | 8 | 11.54 | 0.87 | 7.58 |
| Variable 6 | 8 | 13.14 | 0.97 | 7.41 |
| Variable 7 | 8 | 8.48 | 0.63 | 7.42 |
| Variable 8 | 8 | 8.16 | 0.84 | 10.33 |
| Variable 9 | 8 | 8.30 | 0.82 | 9.86 |
| Variable 10 | 8 | 7.75( | 0.71 | 9.11 |
| Variable 11 | 8 | 6.71 | 1.03 | 15.33 |

| METATARSAL 3 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 8 | 61.87 | 4.88 | 7.89 |
| Variable 2 | 8 | 59.98 | 4.66 | 7.77 |
| Variable 3 | 8 | 60.31 | 5.19 | 8.61 |
| Variable 4 | 8 | 17.08 | 2.14 | 12.55 |
| Variable 5 | 8 | 11.09 | 1.12 | 10.11 |
| Variable 6 | 8 | 12.50 | 1.04 | 8.33 |
| Variable 7 | 8 | 7.59 | 0.66 | 8.66 |
| Variable 8 | 8 | 7.25* | 0.73 | 10.04 |
| Variable 9 | 8 | 7.53 | 0.65 | 8.66 |
| Variable 10 | 8 | 7.12 | 0.75 | 10.52 |
| Variable 11 | 8 | 6.96 | 1.16 | 16.67 |

| METATARSAL 4 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 9 | 59.69 | 4.72 | 7.91 |
| Variable 2 | 9 | 58.31 | 4.39 | 7.54 |
| Variable 3 | 9 | 57.02 | 4.83 | 8.47 |
| Variable 4 | 9 | 14.85 | 1.85 | 12.45 |
| Variable 5 | 9 | 9.34* | 0.91 | 9.70 |
| Variable 6 | 9 | 12.05* | 1.22 | 10.15 |

| | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 7 | 9 | 7.81 | 0.86 | 11.02 |
| Variable 8 | 9 | 7.28 | 0.91 | 12.44 |
| Variable 9 | 9 | 7.78* | 0.89 | 11.41 |
| Variable 10 | 9 | 7.25 | 0.97 | 13.34 |
| Variable 11 | 9 | 7.99 | 1.02 | 12.73 |

| METATARSAL 5 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 10 | 58.53 | 5.23 | 8.94 |
| Variable 2 | 10 | 57.57 | 5.22 | 9.07 |
| Variable 3 | 10 | 50.69 | 5.11 | 10.08 |
| Variable 4 | 10 | 11.62 | 1.42 | 12.24 |
| Variable 5 | 10 | 13.11* | 2.26 | 17.25 |
| Variable 6 | 10 | 17.08 | 1.88 | 11.00 |
| Variable 7 | 10 | 11.44 | 1.44 | 12.58 |
| Variable 8 | 10 | 7.89 | 0.99 | 12.52 |
| Variable 9 | 10 | 6.84 | 1.13 | 16.53 |
| Variable 10 | 10 | 7.89 | 0.99 | 12.52 |
| Variable 11 | 10 | 7.21 | 1.29 | 17.88 |
| Variable 12 | 10 | 9.37 | 0.73 | 7.79 |

MALE GROUP

| METATARSAL 1 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 10 | 52.35 | 2.94 | 5.63 |
| Variable 2 | 10 | 24.55 | 1.79 | 7.27 |
| Variable 3 | 10 | 14.37 | 1.78 | 12.42 |
| Variable 4 | 10 | 17.15 | 1.62 | 9.44 |
| Variable 5 | 10 | 18.34 | 1.75 | 9.54 |
| Variable 6 | 10 | 16.84 | 1.92 | 11.39 |
| Variable 7 | 10 | 18.34 | 1.75 | 9.54 |
| Variable 8 | 10 | 11.88 | 1.40 | 11.80 |
| Variable 9 | 10 | 11.47 | 1.34 | 11.66 |

| METATARSAL 2 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 8 | 65.21 | 2.84 | 4.35 |
| Variable 2 | 8 | 62.70 | 2.87 | 4.57 |
| Variable 3 | 8 | 62.33 | 3.38 | 5.43 |
| Variable 4 | 8 | 17.41* | 1.72 | 9.89 |
| Variable 5 | 8 | 11.81 | 0.79 | 6.68 |
| Variable 6 | 8 | 13.29 | 1.10 | 8.26 |
| Variable 7 | 8 | 8.70 | 0.96 | 11.05 |
| Variable 8 | 8 | 8.31 | 0.90 | 10.90 |
| Variable 9 | 8 | 8.58 | 0.94 | 10.96 |
| Variable 10 | 8 | 7.92 | 0.93 | 11.81 |
| Variable 11 | 8 | 7.18 | 0.93 | 12.98 |

| METATARSAL 3 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 10 | 61.06 | 2.30 | 4.42 |
| Variable 2 | 10 | 59.05 | 2.51 | 4.25 |
| Variable 3 | 10 | 58.89 | 2.69 | 4.57 |
| Variable 4 | 10 | 17.78 | 1.02 | 5.73 |
| Variable 5 | 10 | 11.37 | 1.43 | 12.61 |
| Variable 6 | 10 | 12.93 | 0.99 | 7.68 |
| Variable 7 | 10 | 8.11 | 0.60 | 7.42 |
| Variable 8 | 10 | 7.74 | 0.66 | 8.49 |
| Variable 9 | 10 | 8.07 | 0.61 | 7.55 |
| Variable 10 | 10 | 7.57 | 0.63 | 8.28 |
| Variable 11 | 10 | 6.94 | 0.79 | 11.36 |

| METATARSAL 4 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 10 | 59.17 | 2.87 | 4.85 |
| Variable 2 | 10 | 57.56 | 2.69 | 4.67 |
| Variable 3 | 10 | 55.91 | 2.37 | 4.23 |
| Variable 4 | 10 | 15.63* | 1.65 | 10.53 |
| Variable 5 | 10 | 9.89 | 1.27 | 12.82 |
| Variable 6 | 10 | 12.35 | 1.04 | 8.40 |
| Variable 7 | 10 | 8.32 | 0.68 | 8.14 |
| Variable 8 | 10 | 7.89* | 0.74 | 9.43 |
| Variable 9 | 10 | 8.24* | 0.70 | 8.55 |
| Variable 10 | 10 | 7.22 | 0.48 | 6.69 |
| Variable 11 | 10 | 7.96 | 0.78 | 9.79 |

| METATARSAL 5 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 9 | 58.88 | 3.56 | 6.04 |
| Variable 2 | 9 | 57.74 | 3.39 | 5.88 |
| Variable 3 | 9 | 51.01 | 2.62 | 5.13 |
| Variable 4 | 9 | 11.84 | 1.14 | 9.65 |
| Variable 5 | 9 | 13.66 | 2.10 | 15.39 |
| Variable 6 | 9 | 18.42 | 1.67 | 9.04 |
| Variable 7 | 9 | 11.45 | 1.06 | 9.23 |
| Variable 8 | 9 | 8.34 | 0.82 | 9.81 |
| Variable 9 | 9 | 7.51 | 1.27 | 16.88 |
| Variable 10 | 9 | 8.34* | 0.82 | 9.81 |
| Variable 11 | 9 | 6.81 | 0.64 | 9.41 |
| Variable 12 | 9 | 9.40 | 0.76 | 8.14 |

SEX UNKNOWN GROUP

| METATARSAL 1 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 14 | 52.81 | 4.90 | 9.28 |
| Variable 2 | 14 | 24.73 | 2.09 | 8.47 |
| Variable 3 | 14 | 15.58 | 2.20 | 14.11 |
| Variable 4 | 14 | 17.33* | 2.90 | 16.78 |
| Variable 5 | 13 | 17.69 | 2.41 | 13.63 |
| Variable 6 | 13 | 16.99 | 2.30 | 13.56 |
| Variable 7 | 13 | 17.53 | 2.46 | 14.01 |
| Variable 8 | 14 | 12.25 | 1.33 | 10.90 |
| Variable 9 | 14 | 12.47 | 1.49 | 11.97 |

| METATARSAL 2 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 11 | 66.19 | 6.00 | 9.07 |
| Variable 2 | 11 | 64.13 | 5.25 | 8.19 |
| Variable 3 | 11 | 63.24 | 5.69 | 9.00 |
| Variable 4 | 11 | 17.58 | 2.22 | 12.64 |
| Variable 5 | 11 | 11.72 | 1.07 | 9.13 |
| Variable 6 | 11 | 13.15 | 1.39 | 10.56 |
| Variable 7 | 11 | 8.83 | 1.09 | 12.40 |
| Variable 8 | 11 | 8.70 | 1.06 | 12.17 |
| Variable 9 | 11 | 8.55 | 1.15 | 13.42 |
| Variable 10 | 11 | 7.80 | 1.27 | 16.32 |
| Variable 11 | 11 | 7.22 | 0.78 | 10.79 |

| METATARSAL 3 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 11 | 62.63 | 5.06 | 8.08 |
| Variable 2 | 11 | 60.35 | 4.45 | 7.37 |
| Variable 3 | 11 | 60.18 | 5.02 | 8.35 |
| Variable 4 | 11 | 17.51 | 2.07 | 11.80 |
| Variable 5 | 11 | 11.27 | 1.04 | 9.25 |
| Variable 6 | 11 | 12.93 | 1.33 | 10.26 |
| Variable 7 | 11 | 7.96 | 0.91 | 11.40 |
| Variable 8 | 11 | 7.74 | 0.73 | 9.48 |
| Variable 9 | 11 | 7.71 | 1.02 | 13.25 |
| Variable 10 | 11 | 7.38 | 1.00 | 13.60 |
| Variable 11 | 11 | 7.09 | 1.03 | 14.59 |

| METATARSAL 4 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 12 | 59.86 | 3.09 | 5.17 |
| Variable 2 | 12 | 58.19 | 2.67 | 4.59 |
| Variable 3 | 12 | 56.13 | 2.71 | 4.83 |
| Variable 4 | 12 | 15.34 | 1.30 | 8.50 |
| Variable 5 | 12 | 9.66 | 1.01 | 10.46 |
| Variable 6 | 12 | 12.13 | 1.37 | 11.27 |
| Variable 7 | 12 | 7.90* | 0.82 | 10.36 |
| Variable 8 | 12 | 7.41* | 0.51 | 6.84 |
| Variable 9 | 12 | 7.86 | 0.85 | 10.86 |
| Variable 10 | 12 | 7.56 | 1.09 | 14.36 |
| Variable 11 | 12 | 7.95 | 0.85 | 10.71 |

| METATARSAL 5 | N | Mean | Std Dev | CV |
|---|---|---|---|---|
| Variable 1 | 11 | 59.55 | 4.04 | 6.79 |
| Variable 2 | 11 | 57.90 | 3.43 | 5.92 |
| Variable 3 | 11 | 51.67 | 2.82 | 5.47 |
| Variable 4 | 11 | 12.16 | 1.01 | 8.29 |
| Variable 5 | 11 | 12.73 | 1.45 | 11.36 |
| Variable 6 | 11 | 17.66 | 1.20 | 6.79 |
| Variable 7 | 11 | 11.29 | 0.96 | 8.55 |
| Variable 8 | 11 | 7.78 | 0.53 | 6.76 |
| Variable 9 | 10 | 6.72 | 0.53 | 7.82 |
| Variable 10 | 10 | 7.79 | 0.57 | 7.37 |
| Variable 11 | 11 | 7.04 | 0.89 | 12.71 |
| Variable 12 | 11 | 9.55* | 0.63 | 6.56 |

**Table A5.1**: Frequency of selected non-metrical features of pooled sex samples. The pre-pastoral sample also includes individuals of unknown sex. Refer to chapter two for definitions. * Indicates variation not previously described.

| **Variation** | **Zulu** **%** (n=60) | **Sotho** **%** (n=60) | **European** %(n=60) | **Pre-pastoral** **%** (n=34) |
|---|---|---|---|---|
| METATARSAL 1 | | | | |
| Head shape 1 | 56.6 | 63.3 | 83.3 | 79.4 (n=34) |
| Head shape 2 | 18.3 | 13.3 | 1.7 | 14.7 (n=34) |
| Head shape 3 | 25 | 23.3 | 15 | 5.8 (n=34) |
| Base shape 1 | 78.3 | 61.6 | 68.3 | 79.4 (n=34) |
| Base shape 2 | 20 | 38.3 | 30 | 20.5 (n=34) |
| Base shape 3 | 1.6 | 0 | 0 | 0 (n=34) |
| Lateral base 1 | 16.6 | 13.3 | 23.3 | 27.3 (n=33) |
| Lateral base 2 | 75 | 78.3 | 61.5 | 60.6 (n=33) |
| Lateral base 3 | 8.3 | 8.3 | 16.7 | 12.2 (n=33) |
| METATARSAL 2 | | | | |
| Medial base 1 | 58.3 | 80 | 66.7 | 79.3 (n=29) |
| Medial base 2 | 33.3 | 18.3 | 21.7 | 17.2 (n=29) |
| Medial base 3 | 1.6 | 1.6 | 3.3 | 0 (n=29) |
| Medial base 4 | 5 | 0 | 8.3 | 3.4 (n=29) |
| Medial base 5 | 1.6 | 0 | 0 | 0 (n=29) |
| Medial base 6* | 0 | 0 | 3.3 | 0 (n=29) |
| Lateral base 1 | 6.6 | 6.6 | 31.7 | 3.4 (n=29) |
| Lateral base 2 | 10 | 13.3 | 11.7 | 10.3 (n=29) |
| Lateral base 3 | 40 | 48.3 | 40 | 58.6 (n=29) |
| Lateral base 4 | 18.3 | 13.3 | 3.3 | 13.8 (n=29) |
| Lateral base 5 | 0 | 0 | 1.7 | 0 (n=29) |
| Lateral base 6 | 8.3 | 3.3 | 3.3 | 6.9 (n=29) |
| Lateral base 7 | 3.3 | 0 | 0 | 3.4 (n=29) |
| Lateral base 8 | 10 | 11.6 | 6.7 | 3.4 (n=29) |
| Lateral base 9 | 3.3 | 3.3 | 1.7 | 0 (n=29) |
| METATARSAL 3 | | | | |
| Medial base 1 | 58.3 | 43.3 | 71.7 | 41.9 (n=31) |
| Medial base 2 | 38.3 | 50 | 16.8 | 38.7 (n=31) |
| Medial base 3 | 0 | 3.3 | 0 | 0 (n=31) |
| Medial base 4 | 1.6 | 3.3 | 16.7 | 16.1 (n=31) |
| Medial base 5* | 1.6 | 0 | 0 | 0 (n=31) |
| Medial base 6* | 0 | 0 | 1.7 | 3.2 (n=31) |
| Lateral base 1 | 20 | 15 | 46.7 | 25.8 (n=31) |
| Lateral base 2 | 80 | 83.3 | 53.3 | 74.2 (n=31) |
| Lateral base 3 | 0 | 1.6 | 0 | 0 (n=31) |
| METATARSAL 4 | | | | |
| Medial base 1 | 28.3 | 28.3 | 60 | 27.3 (n=33) |
| Medial base 2 | 20 | 20 | 20 | 6.1 (n=33) |
| Medial base 3 | 51.6 | 51.6 | 20 | 66.6 (n=33) |
| Lateral base | No variation | No variation | No variation | No variation (n=32) |
| METARASAL 5 | | | | |
| Medial base | No variarion | No variation | No variation | No variation (n=31) |

**Table A5.2:** Percentile frequency of pathological lesions in the samples of Sotho, Zulu and European females and males. N = 30 for each group.

| Pathological lesion | Sotho female | Sotho male | Zulu female | Zulu male | Euro female | Euro male |
|---|---|---|---|---|---|---|
| 1 head - hypertrophy medial/dorsomedial eminence | 13 | 20 | 13 | 27 | 26.7 | 40 |
| 1 head - osteophytes medial margin | 0 | 0 | 0 | 0 | 10 | 6.7 |
| 1 head flattenning | 6.6 | 10 | 3.3 | 0 | 3.3 | 0 |
| 1 head dorsal exostosis or spur | 3.3 | 0 | 3.3 | 10 | 0 | 3.3 |
| 5 head dorsal exostosis or spur | 0 | 0 | 3.3 | 0 | 0 | 0 |
| 1 head dorso-lateral hypertrophy | 27 | 0 | 3.3 | 23.3 | 16.7 | 20 |
| 1 head - osteophytes lateral margin | 0 | 0 | 0 | 0 | 13.3 | 10 |
| 1 eroded crista | 3.3 | 3.3 | 0 | 10 | 13.3 | 3.3 |
| 1 eroded plantar extension | 0 | 0 | 0 | 0 | 23.3 | 3.3 |
| 2 eroded plantar extension | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 eroded plantar extension | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 eroded plantar extension | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 eroded plantar extension | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 Osteophytes of metatarsal bases | 3.3 | 10 | 0 | 6.6 | 10 | 0 |
| 2 Osteophytes of metatarsal bases | 3.3 | 0 | 3.3 | 6.6 | 3.3 | 3.3 |
| 3 Osteophytes of metatarsal bases | 3.3 | 0 | 10 | 6.6 | 0 | 0 |
| 4 Osteophytes of metatarsal bases | 3.3 | 3.3 | 6.6 | 10 | 0 | 0 |
| 5 Osteophytes of metatarsal bases | 3.3 | 0 | 10 | 10 | 0 | 3.3 |
| 1 Dorsal lipping of head | 3.3 | 13.3 | 3.3 | 0 | 3.3 | 0 |
| 2 Dorsal lipping of head | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 Dorsal lipping of head | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 Dorsal lipping of head | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 Dorsal lipping of head | 3.3 | 0 | 0 | 3.3 | 0 | 0 |
| 1 Irregular cortical lesions | 3.3 | 3.3 | 3.3 | 0 | 3.3 | 0 |

| **Pathological lesion** | **Sotho female** | **Sotho male** | **Zulu female** | **Zulu male** | **Euro female** | **Euro male** |
|---|---|---|---|---|---|---|
| 2 Irregular cortical lesions | 0 | 0 | 3.3 | 0 | 0 | 0 |
| 3 Irregular cortical lesions | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 Irregular cortical lesions | 0 | 0 | 0 | 3.3 | 0 | 0 |
| 5 Irregular cortical lesions | 0 | 3.3 | 3.3 | 0 | 6.6 | 0 |
| 1 bone callus formation due to fracture | 0 | 3.3 | 0 | 0 | 3.3 | 0 |
| 2 bone callus formation due to fracture | 0 | 3.3 | 0 | 0 | 0 | 3.3 |
| 3 bone callus formation due to fracture | 0 | 0 | 0 | 3.3 | 0 | 3.3 |
| 4 bone callus formation due to fracture | 0 | 0 | 0 | 3.3 | 0 | 3.3 |
| 5 bone callus formation due to fracture | 0 | 0 | 0 | 0 | 0 | 3.3 |
| 1 periarticular bony erosions | 0 | 0 | 0 | 0 | 6.7 | 3.3 |
| 2 periarticular bony erosions | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 periarticular bony erosions | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 periarticular bony erosions | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 periarticular bony erosions | 0 | 0 | 0 | 0 | 0 | 0 |
| styloid process exostosis | 0 | 3.3 | 3.3 | 3.3 | 6.6 | 6.6 |
| 1 ridge between medial and lateral tubercles | 16.6 | 3.3 | 0 | 0 | 3.3 | 6.6 |
| 2 ridge between medial and lateral tubercles | 20 | 13.3 | 0 | 0 | 3.3 | 6.6 |
| 3 ridge between medial and lateral tubercles | 20 | 13.3 | 0 | 0 | 10 | 6.6 |
| 4 ridge between medial and lateral tubercles | 13.3 | 10 | 0 | 0 | 10 | 6.6 |
| 5 ridge between medial and lateral tubercles | 13.3 | 13.3 | 0 | 0 | 6.7 | 10 |
| 2 lateral deviation of distal metatarsal shaft | 0 | 0 | 0 | 0 | 3.3 | 0 |
| 3 lateral deviation of distal metatarsal shaft | 3.3 | 0 | 0 | 3.3 | 0 | 3.3 |
| 4 lateral deviation of distal metatarsal shaft | 3.3 | 3.3 | 3.3 | 6.6 | 0 | 3.3 |
| 5 lateral deviation of distal metatarsal shaft | 3.3 | 6.6 | 6.6 | 0 | 0 | 0 |

**Table A5.3:** Percentile frequency of pathological lesions in the samples of pooled sex Sotho (N=60), Zulu (N=60), European (N=60), Pre-pastoralists (N=16) and sex indeterminate Pre-pastoralists (N=19).

| **Pathological lesion** | **Sotho** | **Zulu** | **Euro** | **Pre-pastoral** |
|---|---|---|---|---|
| 1 head - hypertrophy medial/dorsomedial eminence | 20 | 16.5 | 33.4 | 8.57 |
| 1 head - osteophytes medial margin | 0 | 0 | 8.35 | 5.71 |
| 1 head flattenning | 1.65 | 8.3 | 1.65 | 0 |
| 1 head dorsal exostosis or spur | 6.65 | 1.65 | 1.65 | 0 |
| 5 head dorsal exostosis or spur | 1.65 | 0 | 0 | 0 |
| 1 head dorso-lateral hypertrophy | 13.3 | 13.3 | 18.35 | 2.85 |
| 1 head-osteophytes lateral margin | 0 | 0 | 11.65 | 0 |
| 1 eroded crista | 5 | 3.15 | 8.15 | 8.57 |
| 1 eroded plantar extension | 0 | 0 | 13.3 | 8.57 |
| 2 eroded plantar extension | 0 | 0 | 0 | 0 |
| 3 eroded plantar extension | 0 | 0 | 0 | 0 |
| 4 eroded plantar extension | 0 | 0 | 0 | 0 |
| 5 eroded plantar extension | 0 | 0 | 0 | 0 |
| 1 Osteophytes of metatarsal bases | 3.3 | 6.65 | 5 | 0 |
| 2 Osteophytes of metatarsal bases | 4.95 | 1.65 | 3.3 | 0 |
| 3 Osteophytes of metatarsal bases | 8.3 | 1.65 | 0 | 2.85 |
| 4 Osteophytes of metatarsal bases | 8.3 | 3.3 | 0 | 2.85 |
| 5 Osteophytes of metatarsal bases | 10 | 1.65 | 1.65 | 2.85 |
| 1 Dorsal lipping of head | 1.65 | 8.15 | 1.65 | 2.85 |
| 2 Dorsal lipping of head | 0 | 0 | 0 | 0 |
| 3 Dorsal lipping of head | 0 | 0 | 0 | 0 |
| 4 Dorsal lipping of head | 0 | 0 | 0 | 0 |
| 5 Dorsal lipping of head | 1.65 | 1.65 | 0 | 0 |
| 1 Irregular cortical lesions | 1.65 | 3.3 | 0 | 2.85 |

| **Pathological lesion** | **Zulu** | **Sotho** | **Euro** | **Pre-pastoral** |
|---|---|---|---|---|
| 2 Irregular cortical lesions | 1.65 | 0 | 1.65 | 0 |
| 3 Irregular cortical lesions | 0 | 0 | 0 | 0 |
| 4 Irregular cortical lesions | 1.65 | 0 | 0 | 0 |
| 5 Irregular cortical lesions | 1.65 | 1.65 | 3.3 | 0 |
| 1 bone callus formation due to fracture | 0 | 1.65 | 1.65 | 2.85 |
| 2 bone callus formation due to fracture | 0 | 1.65 | 1.65 | 0 |
| 3 bone callus formation due to fracture | 1.65 | 0 | 1.65 | 0 |
| 4 bone callus formation due to fracture | 1.65 | 0 | 1.65 | 0 |
| 5 bone callus formation due to fracture | 0 | 0 | 1.65 | 0 |
| 1 periarticular bony erosions | 0 | 0 | 5 | 0 |
| 2 periarticular bony erosions | 0 | 0 | 0 | 0 |
| 3 periarticular bony erosions | 0 | 0 | 0 | 0 |
| 4 periarticular bony erosions | 0 | 0 | 0 | 0 |
| 5 periarticular bony erosions | 0 | 0 | 0 | 0 |
| styloid process exostosis | 3.3 | 1.65 | 6.6 | 2.85 |
| 1 ridge between medial and lateral tubercles | 1.65 | 9.95 | 4.95 | 2.85 |
| 2 ridge between medial and lateral tubercles | 0 | 16.65 | 4.95 | 2.85 |
| 3 ridge between medial and lateral tubercles | 0 | 16.65 | 13.3 | 2.85 |
| 4 ridge between medial and lateral tubercles | 0 | 11.65 | 13.3 | 0 |
| 5 ridge between medial and lateral tubercles | 0 | 13.3 | 1.65 | 0 |
| 2 lateral deviation of distal metatarsal shaft | 0 | 0 | 1.65 | 0 |
| 3 lateral deviation of distal metatarsal shaft | 1.65 | 1.65 | 1.65 | 0 |
| 4 lateral deviation of distal metatarsal shaft | 4.95 | 3.3 | 0 | 0 |
| 5 lateral deviation of distal metatarsal shaft | 3.3 | 4.95 | 0 | 0 |