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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