

Variation in conformation in a cohort of National Hunt racehorses

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Supplementary information

TABLE 1: Variation of conformational parameters in a cohort of National Hunt racehorses: mean, s.d., maximum, minimum, skewness and kurtosis. The skewness value indicates the symmetry, the kurtosis value the 'peakedness' of the distribution. Positive skewness values indicate scores clustered at the low values, positive kurtosis values indicate that the distribution is peaked (clustered in the centre). For not-normally distributed conformational parameters (Kolmogorov-Smirnov test $P < 0.5$), the median and the interquartile range are displayed. Lengths in cm, joint angles, inclines and deviations in degrees

	Mean	s.d.	Median	Inter quartile range	Min	Max	Skewness	Kurtosis
Length measurements								
neck length	76.36	4.58			66.72	89.09	0.29	-0.40
back length	87.48	4.21			76.65	97.65	-0.01	-0.35
horse length	197.64	8.04			175.40	224.42	0.32	0.41
trunk length	85.12	3.57			75.65	94.64	0.11	0.15
trunk height	73.28	2.15			68.38	80.79	0.32	0.31
height at withers	161.86	3.55			154.03	173.08	0.18	-0.10
forelimb	152.11	3.46			142.96	162.90	0.09	0.16
segmental_forelimb	184.45	4.03			173.83	196.32	0.16	0.28
scapula	57.90	2.19			51.66	65.19	0.29	0.91
humerus	30.54	1.67	30.65	2.00	26.23	34.67	-0.29	-0.08
radius	40.47	1.56			36.22	45.87	0.24	0.65
carpus	10.58	0.65			8.57	12.23	-0.31	0.04
metacarpus	23.67	0.87			21.70	26.25	0.26	-0.17
digit_fore	21.79	1.32	21.59	2.00	18.40	26.38	0.43	0.52
hoof_fore	9.10	0.96	8.98	6.00	6.48	12.77	0.58	1.45
heel_fore	3.66	0.84			1.33	7.12	0.27	1.58
croup height	162.81	3.29			154.84	172.62	0.16	0.11
hindlimb	137.79	3.41			128.05	147.08	0.15	-0.19
segmental_hindlimb1	218.68	7.26			200.67	239.62	0.14	0.04
segmental_hindlimb2	153.26	4.85			142.44	167.19	0.37	-0.19
pelvis length	49.18	3.12			40.35	57.68	-0.22	-0.20
pelvis height	38.73	1.80			34.74	43.56	0.11	-0.47
croup length	41.44	2.42			34.40	47.78	0.01	0.16
ilium	34.85	2.95			22.73	41.98	-0.23	0.63
pubis	18.30	3.27			10.14	27.02	-0.10	-0.40
femur	34.49	3.22			27.31	43.33	0.26	-0.31
tibia	58.57	2.92			52.03	65.98	0.17	-0.22
tarsus	13.32	1.18			8.59	16.84	-0.68	2.44
metatarsus	28.87	1.36			25.65	33.65	0.91	1.74
digit_hind	22.28	1.25			19.42	28.17	0.68	1.62
hoof_hind	9.32	0.70			6.99	11.12	-0.26	0.47
heel_hind	3.56	0.98			0.89	7.25	0.14	0.33
3D Joint angles								
shoulder joint	115.81	3.88			101.87	125.86	-0.41	0.81
elbow joint	140.06	4.65			123.12	153.43	-0.23	0.47
carpal joint	170.85	2.04	171.14	3.00	164.84	174.94	-0.53	-0.07
mcp joint	149.74	4.95	150.42	6.00	130.22	161.54	-0.85	1.55
dip joint_fore	160.05	5.76			143.29	173.30	-0.14	-0.29
coxal angle	133.36	7.55			110.60	151.05	-0.31	0.11
hip joint	75.34	9.81			44.93	105.38	0.24	0.04
stifle joint	118.75	7.76			99.07	142.41	0.21	-0.17

tarsal joint	157.46	4.10	158.20	5.00	140.12	165.87	-0.94	1.48
mtp joint	152.88	5.43	153.97	6.00	135.17	165.42	-0.70	0.83
dip joint_hind	161.45	5.55			148.68	175.81	0.10	-0.30
2D Joint angles: lateral view								
shoulder joint_lat	242.11	4.38			229.31	257.40	0.29	0.89
elbow joint_lat	140.28	4.69			123.53	153.39	-0.19	0.36
carpal joint_lat	186.12	3.08			178.71	194.19	0.18	-0.25
mcp joint_lat	150.35	4.67	150.82	6.00	135.10	164.70	-0.42	0.72
dip joint_fore_lat	163.79	8.77	162.64	11.00	146.33	198.89	0.99	1.53
coxal angle_lat	212.10	10.02			181.28	240.82	0.04	0.45
hip joint_lat	75.42	9.68			51.20	106.41	0.33	0.04
stifle joint_lat	240.33	8.27			214.21	260.52	-0.28	-0.15
tarsal joint_lat	159.82	3.96	160.35	5.00	146.71	168.28	-0.65	0.73
mtp joint_lat	153.90	5.34	154.92	6.00	137.59	174.58	-0.32	1.17
dip joint_hind_lat	165.03	6.66			149.94	188.39	0.39	0.18
2D Joint angles: cranial view								
shoulder joint_cran	159.72	4.43			145.26	173.13	0.00	0.23
elbow joint_cran	177.43	4.41			166.13	193.19	0.26	0.47
carpal joint_cran	186.12	1.80			178.41	190.53	-0.45	1.17
mcp joint_cran	180.08	6.37	180.80	6.00	148.11	206.24	-0.23	4.78
dip joint_fore_cran	182.17	9.44	183.59	10.00	145.84	206.55	-0.82	1.48
stifle joint_cran	167.66	4.92			157.56	180.71	0.26	-0.51
tarsal joint_cran	190.45	3.85	190.27	4.00	180.28	214.56	1.35	7.58
mtp joint_cran	183.72	6.51			159.83	206.86	0.14	1.14
dip joint_hind_cran	190.50	6.76			168.08	208.84	-0.27	0.84
Inclines: angle of segments with regards to horizontal								
scapula_incline	-68.71	3.62	68.88	5.00	-78.01	-59.39	0.21	0.02
humerus_incline	-130.80	3.85			-141.81	-118.98	0.16	0.39
pelvis_incline	-171.42	3.69	171.15	5.00	-179.36	-163.07	-0.18	-0.53
femur_incline	-57.77	6.60			-77.27	-40.70	-0.20	0.42
croup_incline	-146.59	3.25			-156.73	-137.95	-0.25	0.33
hoof angle_fore	-53.09	6.70	51.66	5.00	-88.28	-40.56	-2.48	8.42
hoof angle_hind	-50.76	3.30			-65.13	-43.26	-0.62	1.17
Deviations as viewed from lateral								
deviation lateral forelimb	183.61	3.19	183.74	4.00	172.73	191.87	-0.40	0.83
deviation lateral carpus	184.41	3.08	184.43	4.00	171.82	192.17	-0.53	1.48
deviation lateral mcp	184.35	3.18	184.38	4.00	173.60	192.23	-0.41	0.90
deviation lateral hindlimb	176.88	4.38	177.29	6.00	165.98	187.88	-0.17	-0.49
deviation lateral tarsus	175.94	4.06			163.88	184.47	-0.31	-0.22
deviation lateral mtp	177.48	4.26			166.81	188.48	-0.10	-0.47
Deviations as viewed from cranial								
deviation cranial forelimb	179.91	2.88			166.54	190.25	0.07	1.10
deviation cranial carpus	179.95	2.64	180.19	3.00	170.77	196.66	0.31	3.12
deviation cranial mcp	179.87	2.64	180.62	3.00	168.63	192.81	0.19	1.77
deviation caudal hindlimb	180.07	2.34	180.88	2.00	173.06	187.71	0.10	-0.26
deviation caudal tarsus	179.69	2.85	181.59	3.00	171.05	187.67	0.03	-0.28
deviation caudal mtp	179.74	2.75	181.86	2.00	173.07	186.96	0.07	-0.70
Circumferences								
neck	82.26	3.35	82.00	3.00	72.00	91.00	-0.63	0.93
girth	188.49	4.81	188.00	7.00	174.00	200.00	0.05	0.13
radius	37.59	2.35	38.00	4.00	31.00	42.00	-0.53	-0.35
metacarpus.	20.15	0.66	20.00	0.50	18.00	22.00	-0.02	0.56
pastern_fore	19.09	0.97	19.00	2.00	17.00	22.00	0.49	0.01
hoof_fore	42.10	2.17	42.00	3.00	37.50	48.00	0.18	-0.24
tibia	44.42	1.61	44.00	3.00	40.00	48.00	-0.35	-0.10
metatarsus	21.79	0.80	22.00	1.00	19.00	24.00	-0.07	0.23
pastern_hind.	20.60	1.19	20.50	1.00	19.00	29.50	2.21	14.30
hoof_hind	41.93	2.17	42.00	2.00	36.00	48.00	-0.09	0.28
intermandibular width	12.12	1.15	12.00	7.00	8.00	15.00	-0.35	1.74
weight (kg)	501.28	33.73			425.00	588.00	0.09	-0.09