Table 1

Previous studies with cohorts larger than 20 healthy subjects where brainstem structures are measured according to Oba et al. and Quattrone et al. Results are presented as means ± standard deviation (range), except for those in *italic* which are medians. Standard deviation, range and sex distribution is presented when available in the original article.

Study	N	Age	Midbrain area (mm^2)	Pons area (mm^2)	SCP width (mm)	MCP width (mm)	M/P-ratio	MRPI
Oba et al. (2005)	n=31	71.5 ± 5.7 (61-82)	117.7 ± 14.7 (101-169)	502.4 ± 42.7 (427-582)			0.236 ± 0.034 (0.18-0.32)	
	w=17	72.1 ± 6.7 (61-82)	117.4 ± 13.2 (101-136)	487.1 ± 39.8 (427-555)				
	m=14	70.9 ± 4.9 (64-80)	118.1 ± 17.4 (101-169)	521.0 ± 41.5 (432-582)				
Gröschel et al. (2006)	n=22		138.1 ± 25.6					
Quattrone et al. (2008)	n=50	66.6 ± 6.5	*122* (94-168)	*469* (386-622)	*3.8* (3.1-4.5)	*8.8* (8.1-10.5)	*0.26* **	*9.21* (6.29-12.77)
Longoni et al. (2010)	n=24	63.8 (48-79)	130.5 ± 30.5 (89.6-218.1)	537.8 ± 61.1 (398.5-663.3)	3.9 ± 0.5 (2.9-5.1)	9.5 ± 1.2 (6.4-11.4)	0.23 **	10.5 ± 2.4 (6.3-14.9)
Morelli et al (2011)	n=38	68.08 ± 6.1 (57-85)	122 ± 17.3	473 ± 47.4	3.75 ± 0.2	8.95 ± 0.6	0.26 ± 0.04	9.4 ± 1.78
Morelli et al (2014)	n=81	65.4 ± 7.6	142.4 ± 21.2	528.8 ± 51.6	3.70 ± 0.4	9.04 ± 0.8		
Sankhla et al. (2016)	n=30	62.3 ± 10.67	135.57 ± 21.72 (86-168)	495.47 ± 37.71 (424-656)	3.46 ± 0.57 (2.2-4.67)	8.62 ± 0.68 (7.0-9.91)	0.27 ± 0.04 (0.18-0.37)	9.45 ± 1.87 (6.85-16.58)
Nigro et al. (2017)	n=92	68.73 ± 5.92	134 ± 18	526 ± 55	3.75 ± 0.45	8.97 ± 0.77		9.51 ± 1.4
Nigro et al. (2017)	n=86	69.08 ± 5.66	138 ± 18	524 ± 53	3.71 ± 0.46	8.90 ± 0.80	0.26 ± 0.03	9.30±1.45
Quattrone et al. (2018)	n=53	71.5 ± 5.2 (63-83)					0.26 **	9.05 ± 1.3 (6.60-12.12)
Ahn et al. (2019)	n=27	70.3 (48-80)	129	517 ± 54 CI 497-540			0.25 **	
Mangesius et al. (2020) *	n=85	66.01 ± 5.82	121.61 ± 13.35	540.55 ± 50.62	3.71 ± 0.37	10.02 ± 0.77	0.23 ± 0.02	12.16 ± 1.69
	w=42	64.50 ± 6.56	121.34 ± 12.52	528.22 ± 50.09	3.65 ± 0.33	9.94 ± 0.75	0.23 ± 0.02	11.99 ± 1.56
	m=43	67.48 ± 4.61	121.87 ± 14.26	552.60 ± 48.73	3.77 ± 0.39	10.10 ± 0.79	0.22 ± 0.02	12.33 ± 1.81
Ruiz & Bakklund et al. (2022)	n=996	58.95 ± 4.22 (50.5-66.8)	136.70 ± 20.52 (75.96-222.39)	542.16 ± 57.80 (386.54-812.50)	3.84 ± 0.47 (2.45-5.50)	9.42 ± 0 .85 (5.25-12.95)	0.25 ± 0.04 (0.14-0.41)	10.00 ± 1.90 (5.54-18.10)
	w=527	58.74 ± 4.26 (50.48-66.31)	136.71 ± 19.75 (81.88-211.88)	518.21 ± 47.82 (386.54-695.68)	3.74 ± 0.46 (2.60-5.15)	9.14 ± 0.77 (5.25-11.45)	0.26 ± 0.04 (0.15-0.41)	9.49 ± 1.67 (5.54-15.57)
	m=469	59.18 ± 4.17 (50.99-66.83)	136.69 ± 21.39 (75.96-222.39)	569.08 ± 56.21 (416.46-812.50)	3.94 ± 0.46 (2.45-5.50)	9.74 ± 0.83 (6.80-12.95)	0.24 ± 0.03 (0.14-0.36)	10.57 ± 1.98 (6.11-18.10)

N: Number of subjects; n: total; w: women; m: men; CI: Confidence Interval (95%); M/P-ratio: Midbrain-to-Pons ratio; * Only results for participants aged 50-80 years are presented in this table; ** Converted P/M-ratios: M/P-ratio = $(P/M\text{-ratio})^{-1}$

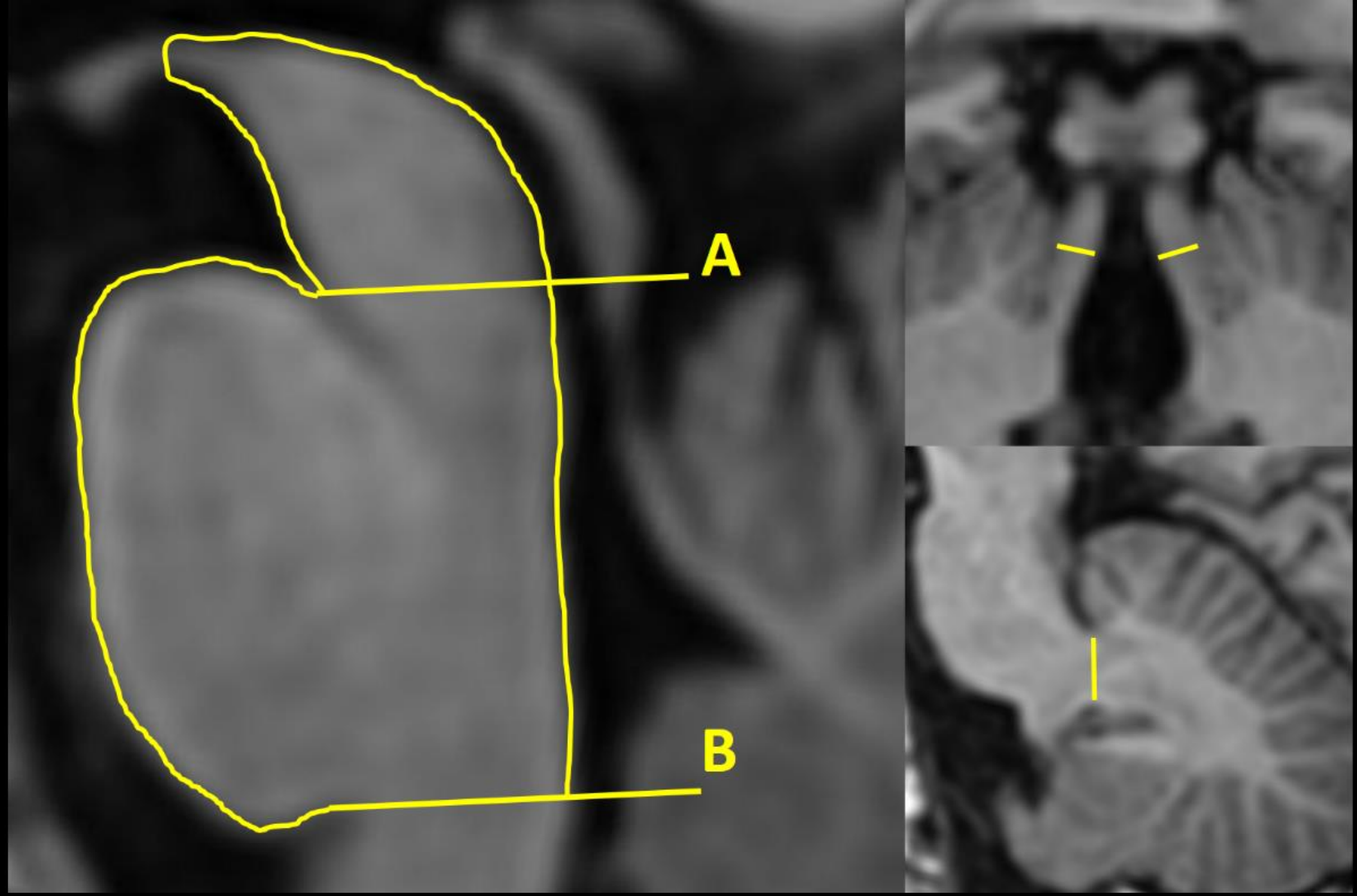
Table 2

ICC-values for re-measurements on realigned images and original images, with 95% confidence intervals in parentheses.

	Inter-rater reliability	Intra-rater reliability rater 1	Intra-rater reliability rater 2
Midbrain	0.926 (0.889-0.951) [A]	0.932 (0.727-0.973) [A]	0.955 (0.879-0.979) [A]
	0.956 (0.935-0.970) [B]	0.966 (0.835-0.987) [B]	0.961 (0.862-0.984) [B]
Pons	0.978 (0.951-0.989) [A]	0.972 (0.948-0.984) [A]	0.929 (0.878-0.959) [A]
	0.983 (0.967-0.990) [B]	0.988 (0.974-0.994) [B]	0.980 (0.920-0.992) [B]
MCP	0.932 (0.899-0.954) [A]	0.903 (0.836-0.944) [A]	0.807 (0.683-0.885) [A]
	0.954 (0.933-0.969) [B]	0.955 (0.921-0.974) [B]	0.933 (0.884-0.961) [B]
SCP	0.866 (0.808-0.908) [A]	0.785 (0.586-0.884) [A]	0.837 (0.721-0.906) [A]
	0.899 (0.854-0.931) [B]	0.962 (0.933-0.978) [B]	0.891 (0.755-0.945) [B]
M/P-ratio	0.916 (0.877-0.943) [A]	0.959 (0.897-0.981) [A]	0.937 (0.758-0.975) [A]
	0.946 (0.921-0.964) [B]	0.984 (0.956-0.993) [B]	0.948 (0.451-0.985) [B]
MRPI	0.888 (0.838-0.923) [A]	0.832 (0.598-0.919) [A]	0.873 (0.787-0.926) [A]
	0.911 (0.871-0.940) [B]	0.957 (0.901-0.978) [B]	0.930 (0.868-0.962) [B]

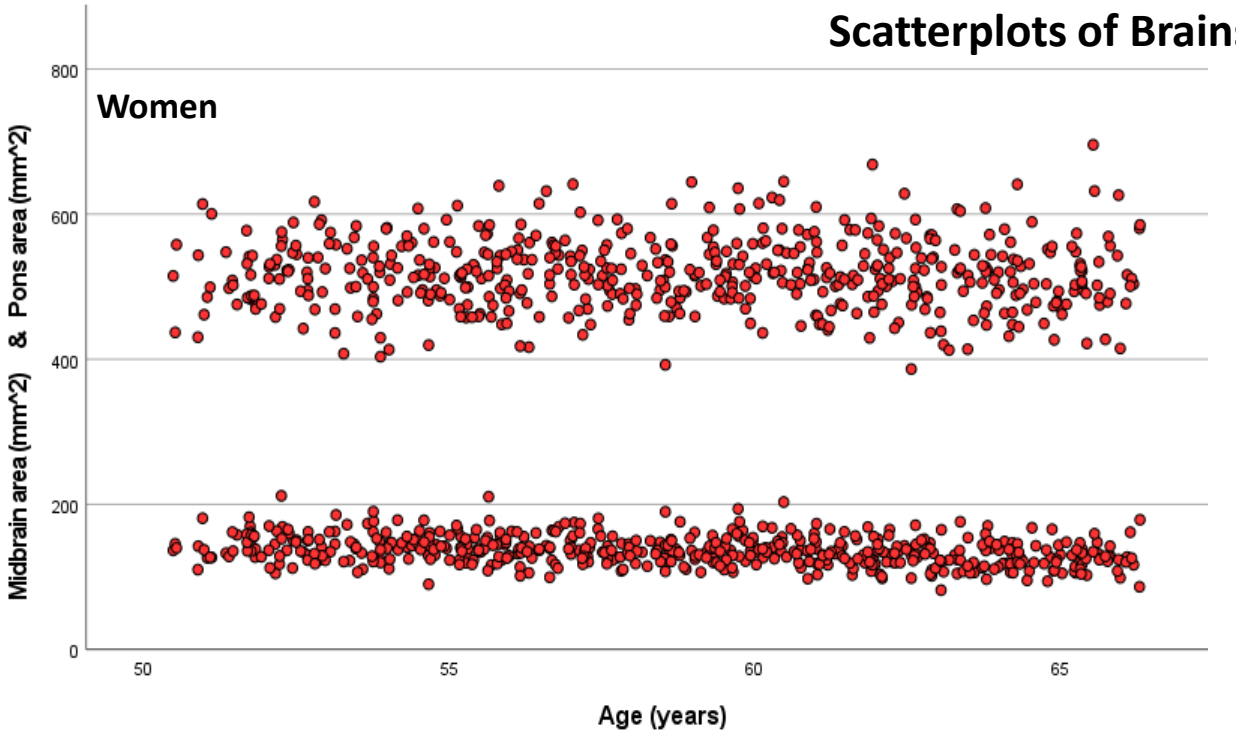
A: Re-measurements on realigned images; B: Re-measurements on original images

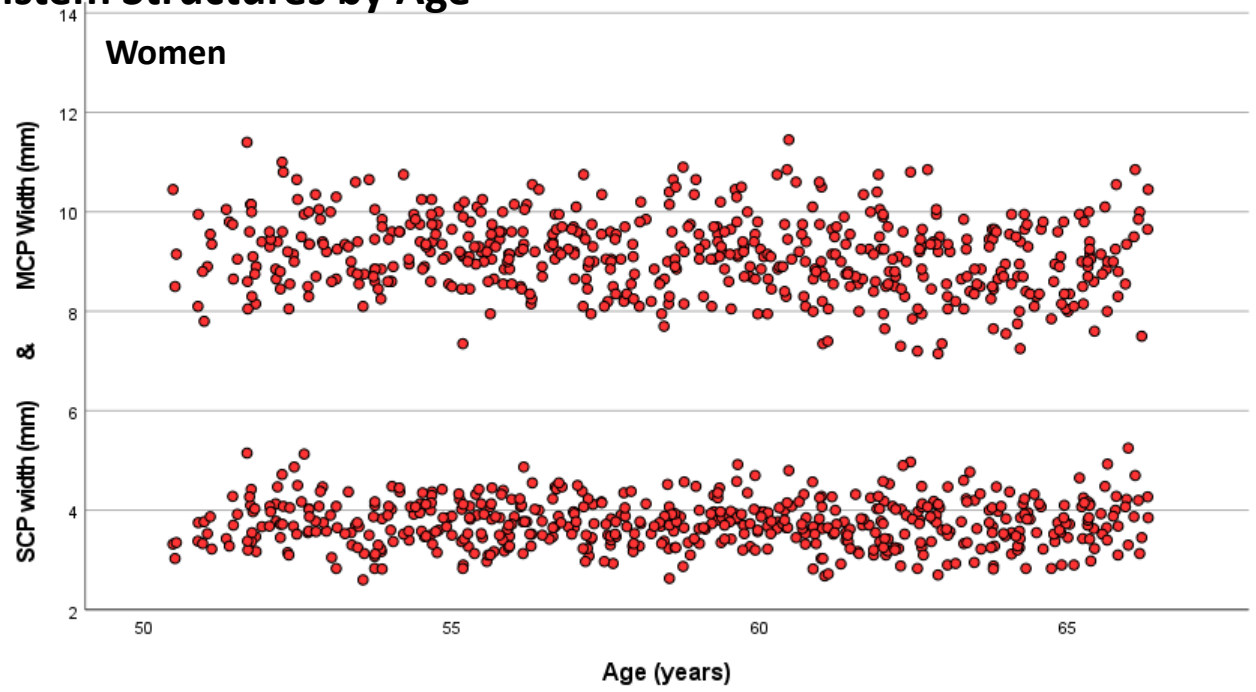
Figure 1

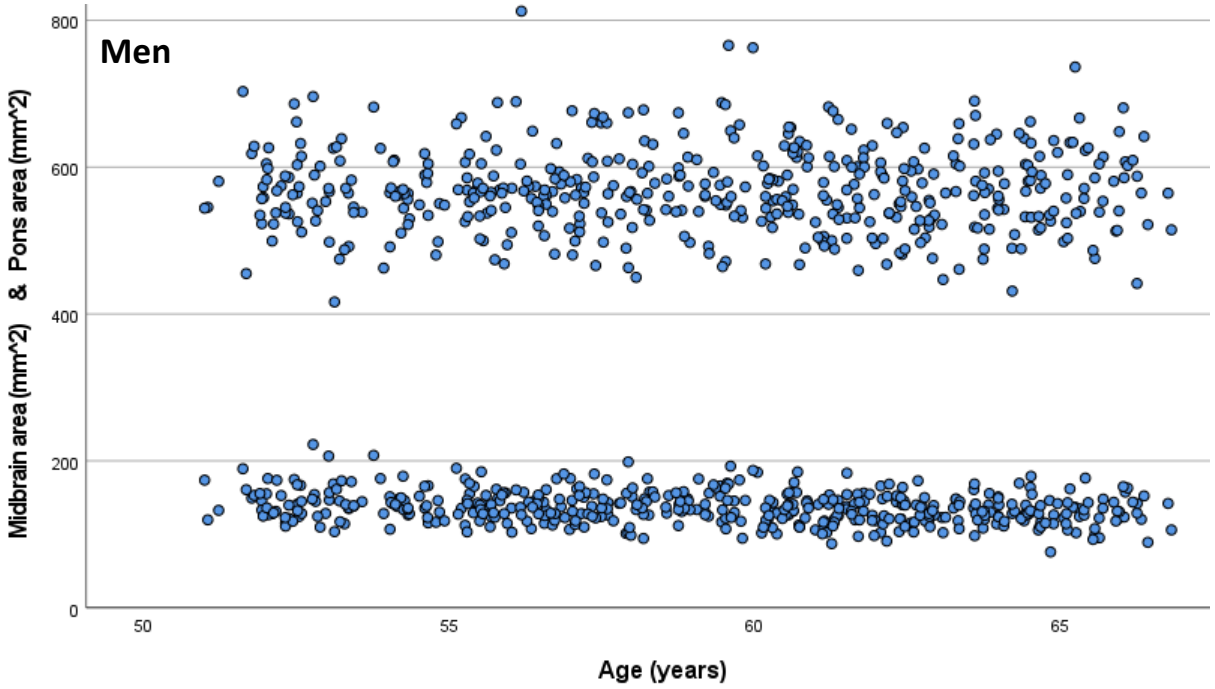


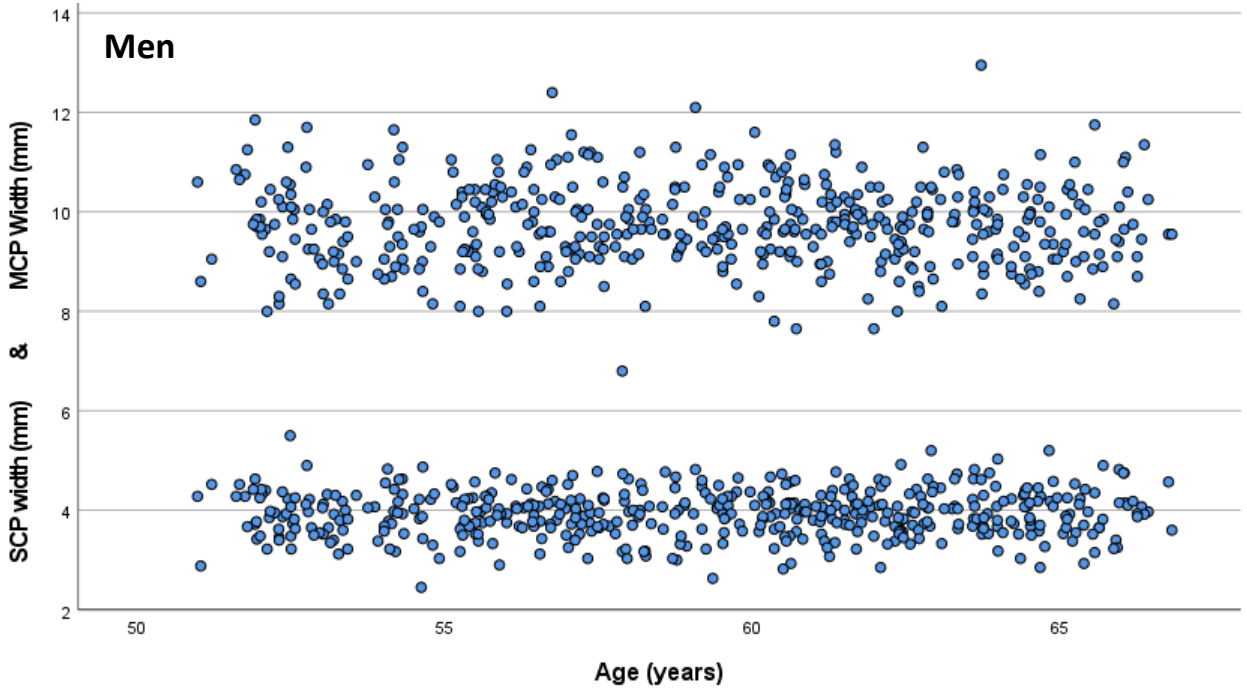
Measurements of the midbrain and pons area, MCP and SCP widths.

Scatterplots of Brainstem Structures by Age

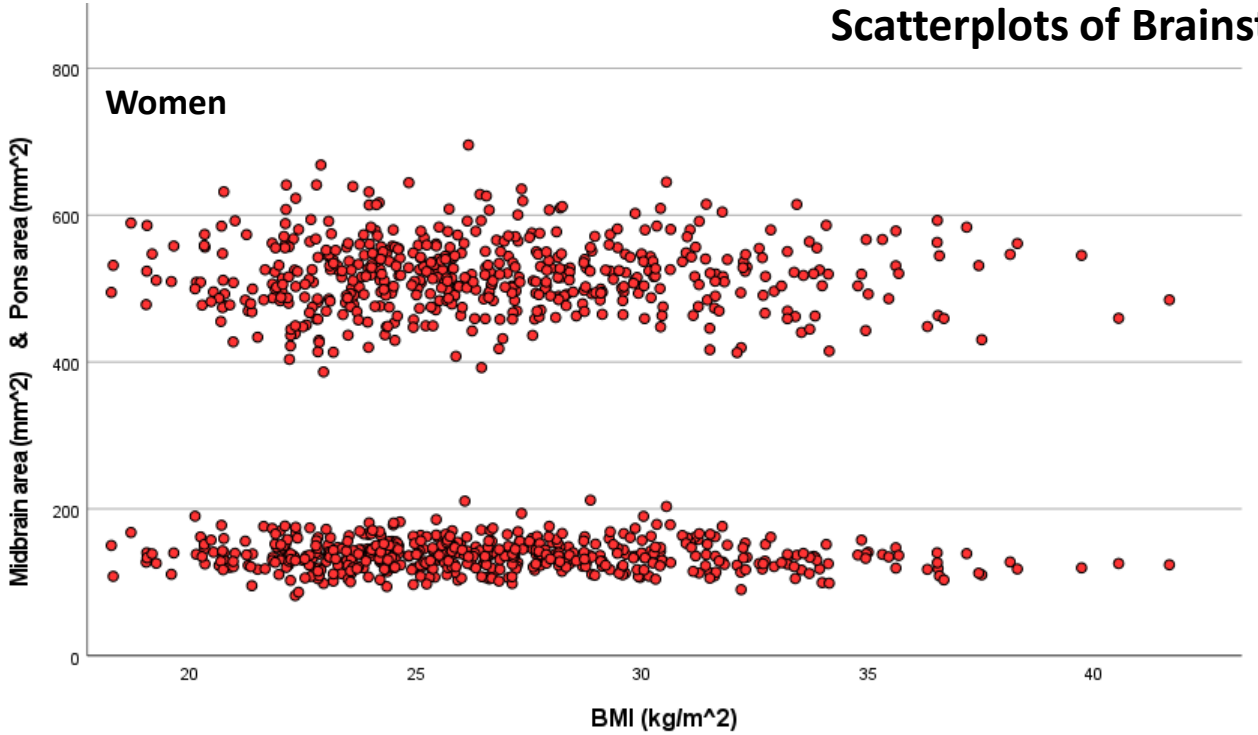


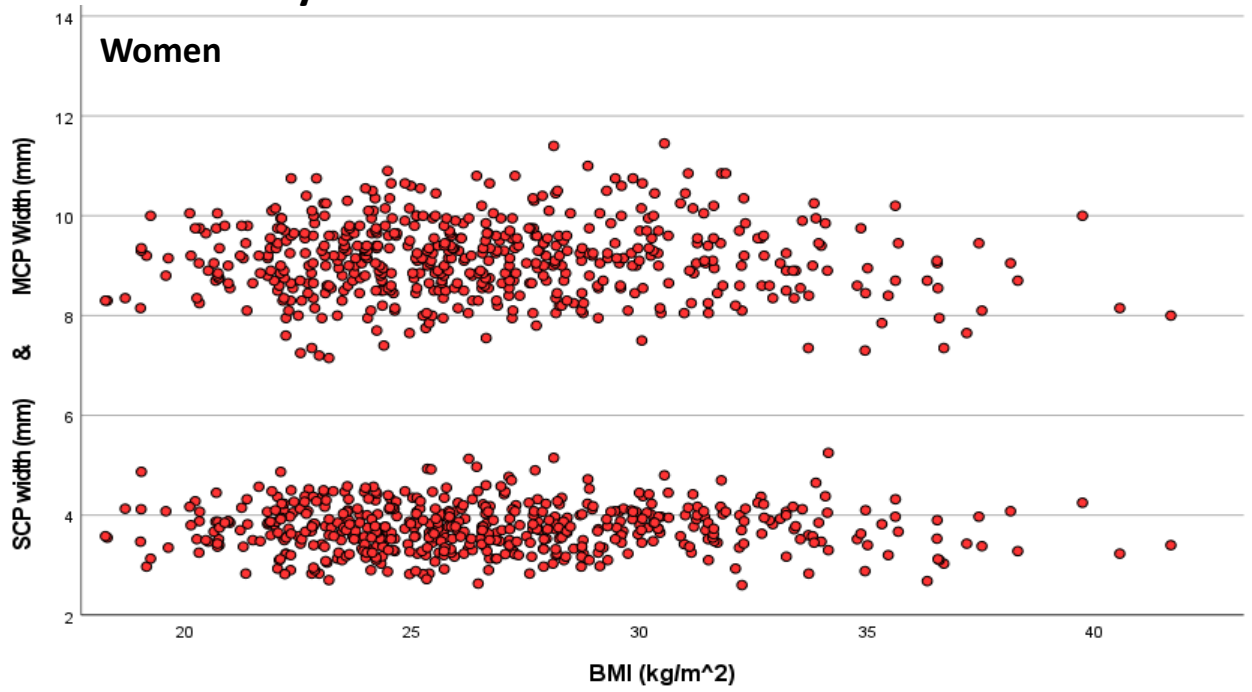


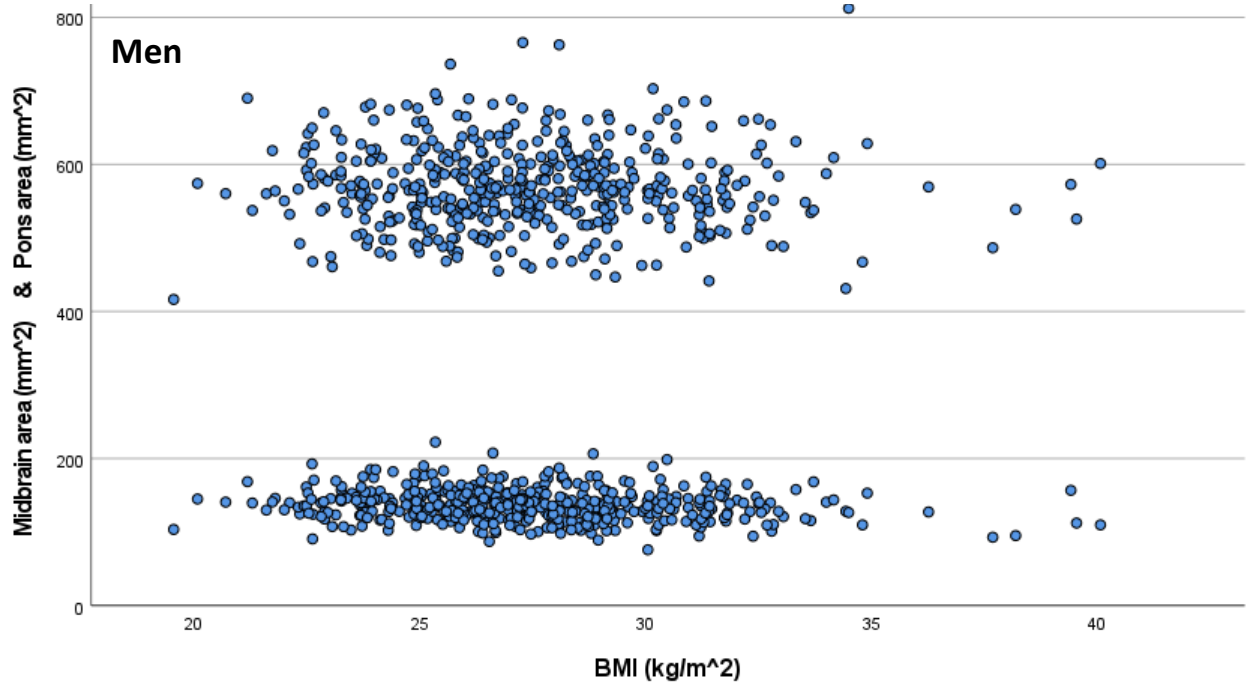


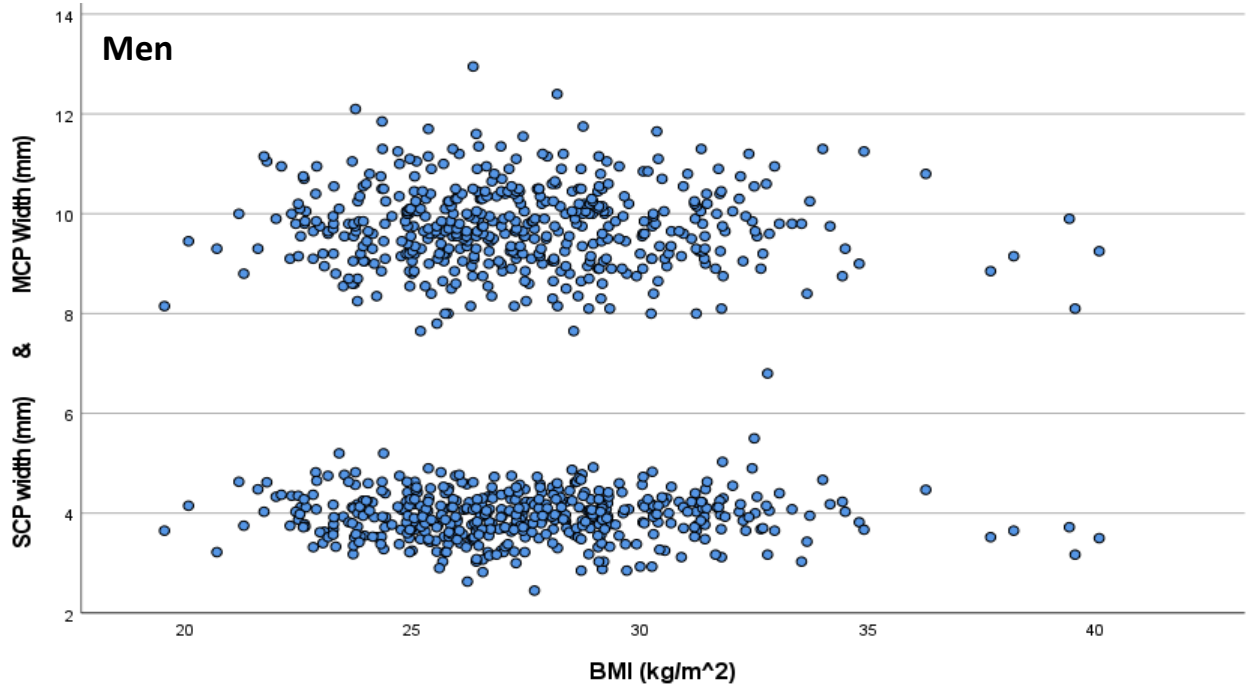


Scatterplots of Brainstem Structures by BMI

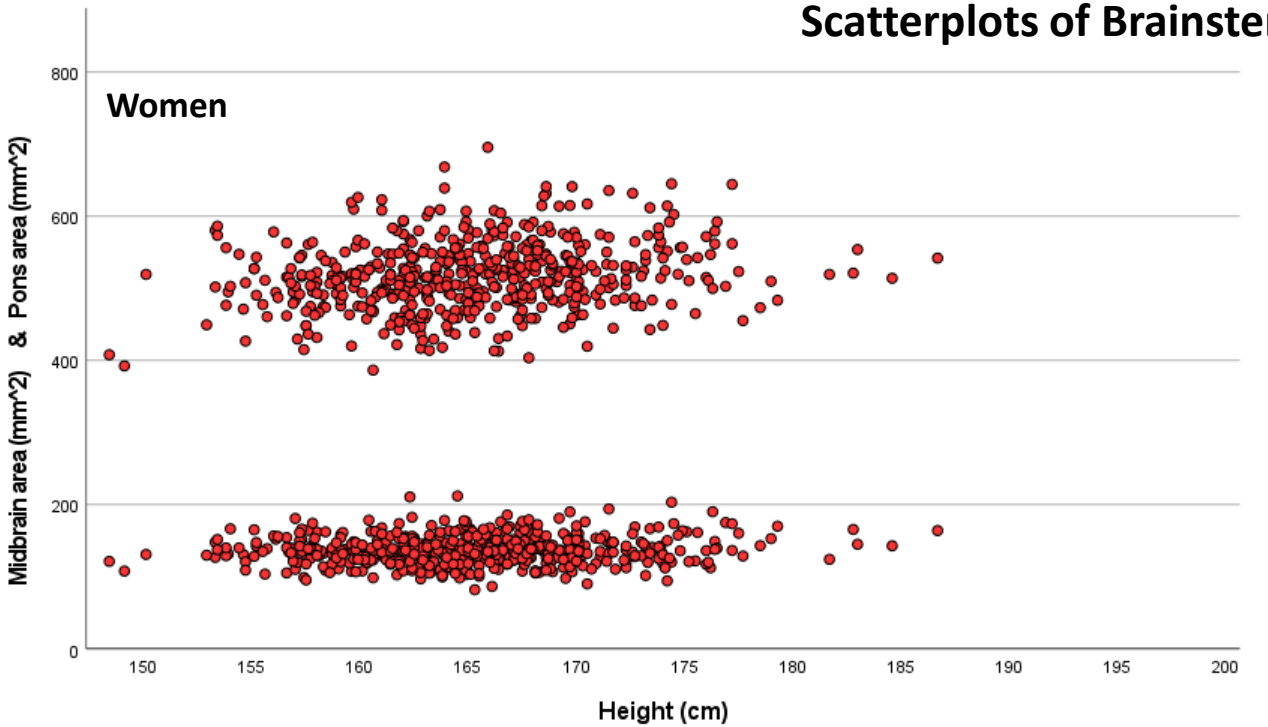


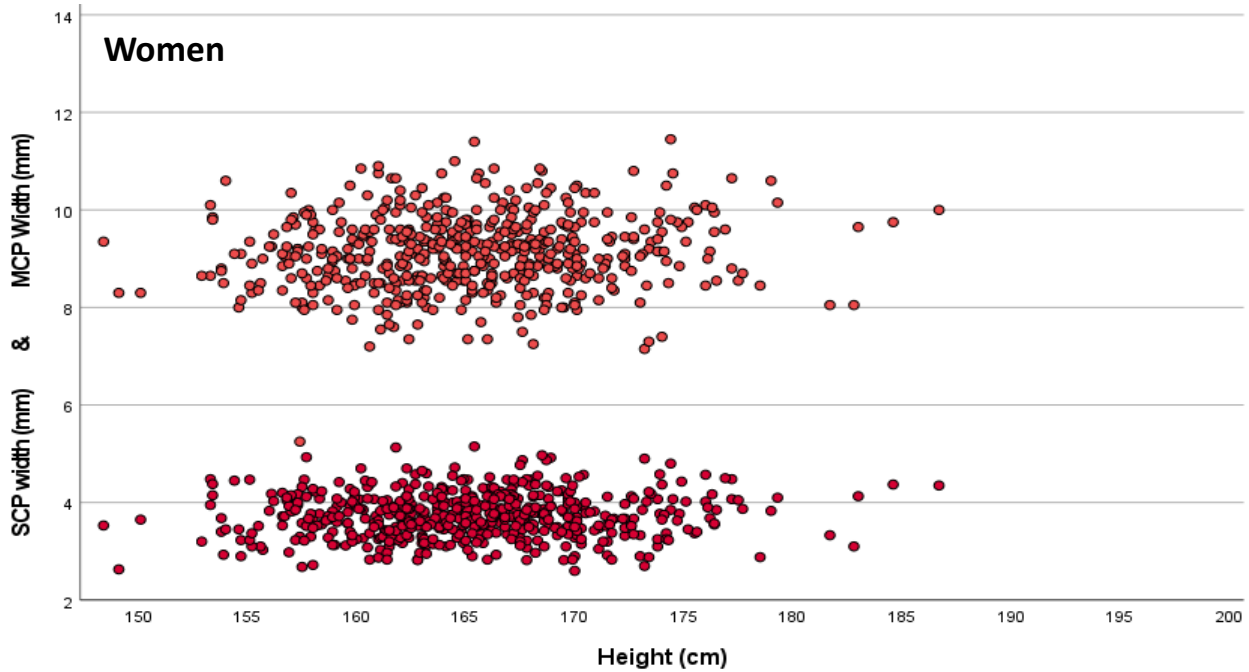


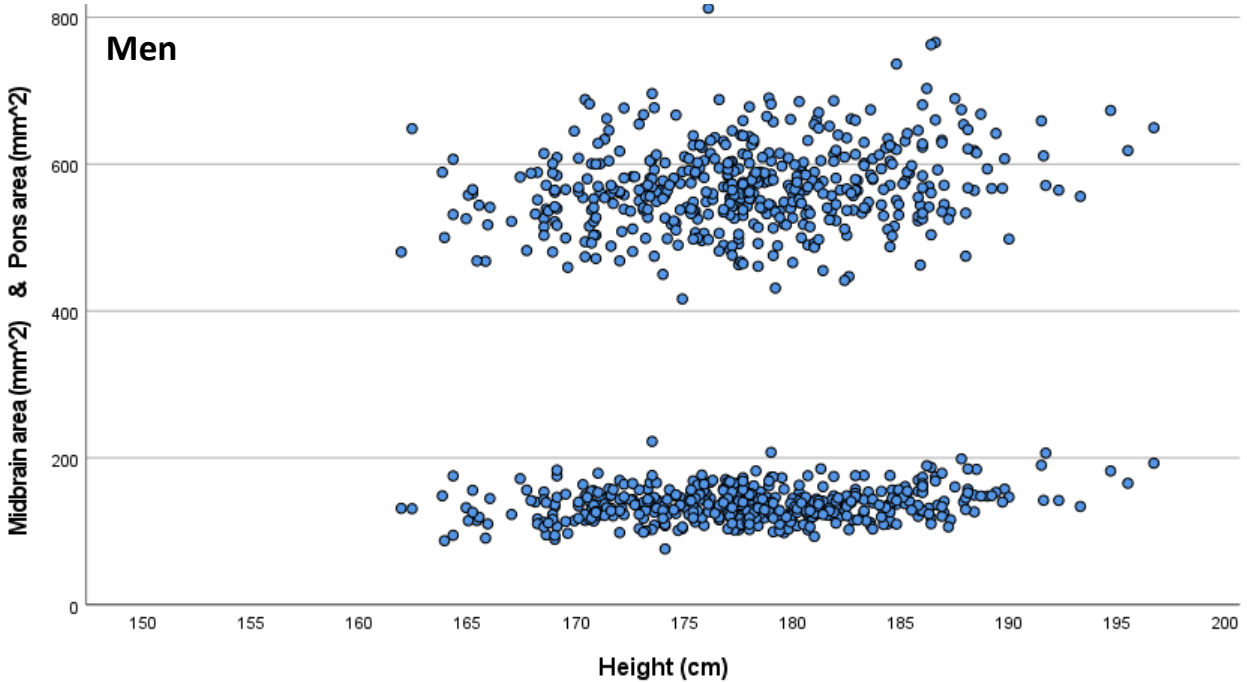


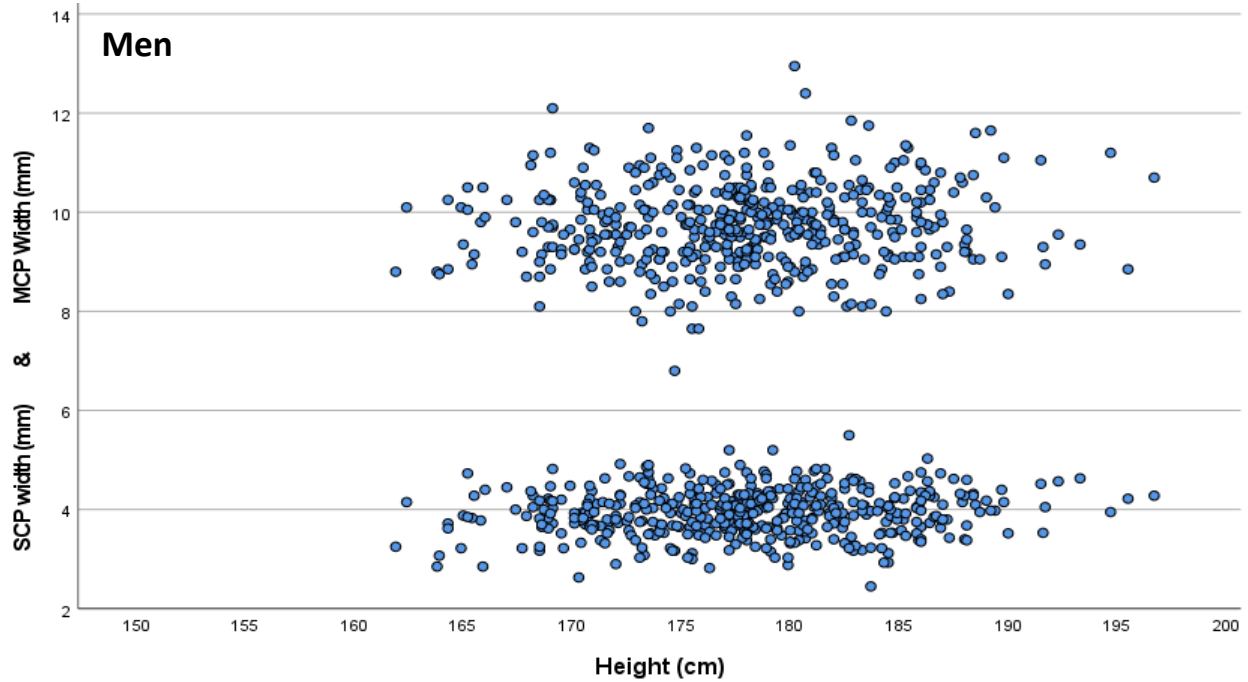


Scatterplots of Brainstem Structures by Height









Scatterplots of Brainstem Structures by Weight