

**Supplemental table 1. Used statistical test, R-packages, and formulae.**

Statistical test	Function	R- package	Version	Formula
1. Generalized linear model	glm()	stats	3.6.1	MRI measurement ~ UMN group + age + sex + total brain volume + disease duration  MRI measurement ~ (UMN group * LMN group) + age + sex + total brain volume + disease duration
2. Step-wise model selection calculation	step()	stats	3.6.1	MRI measurement ~ group + age + sex + handedness + <i>C9orf72</i> RE + total brain volume
3. Spearman's rank correlation	cor.test()	stats	3.6.1	~ MRI measurement + group
4. Kruskal-Wallis test	kruskal.test()	stats	3.6.1	Demographic variable ~ group
5. Linear mixed model	lmer()	lmerTest	3.1.0	ALSFRS-R-score ~ time between visits + (time between visits   ALS subject)  CT ~ age + sex + total brain volume + time between visits + (time between visits   ALS subject)

Devine score ~ age + sex + follow-up visits + (follow-up visits | ALS subject)

MRI measurement ~ category + age + sex + total brain volume + (1 | body region)

scale(MRI measurement) [or]  
scale(Devine score) ~ age + sex + time between visits + (time between visits | ALS subject)

6. Linear model	lm()	stats	3.6.1	thickness ~ group + age + sex
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For reproducibility reasons we show statistical formulae, functions and R-package versions, in order of appearance in Methods. Abbreviations: *C9orf72* RE = *C9orf72* repeat length expansion, ALSFRS-R = revised ALS functional rating scale, NA = not applicable.