

Table 3. Log-linear mixed effects regression model results. SD: Standard Deviation; SE: Standard Error; CI: Confidence Interval

3.a - Linear mixed effects regression model: LOG10(FVC)~Decimal Age

Fixed effects:

	Estimate	SE	p value	95% CI
(Intercept)	-0.457	0.035	<0.001	[-0.522; -0.390]
Decimal Age	0.0454	0.003	<0.001	[0.038; 0.052]

Random effects:

Groups	Name	SD	95% CI
Individual	(Intercept)	0.075	[0; 0.03]
Individual	Decimal Age	0.011	[0.009; 0.015]
	Residual	0.009	

3.b - Linear mixed effects regression model: LOG10(FEV1)~Decimal Age

Fixed effects:

	Estimate	SE	p value	95% CI
(Intercept)	-0.539	0.028	<0.001	[-0.578; -0.490]
Decimal Age	0.038	0.002	<0.001	[0.032; 0.042]

Random effects:

Groups	Name	Std.Dev.	95% CI
Individual	(Intercept)	0.113	[0; 0.02]
Individual	Decimal Age	0.009	[0.009; 0.015]
	Residual	0.003	

3.c - Linear mixed effects regression model: LOG10(FEV1/FVC)~Decimal Age

Fixed effects:

	Estimate	SE	p value	95% CI
(Intercept)	-0.074	0.024	0.002	[-0.123; -0.028]
Decimal Age	-0.008	0.002	<0.001	[-0.012; -0.004]

Random effects:

Groups	Name	Std.Dev.	95% CI
Individual	(Intercept)	0	[0; 0.021]
Individual	Decimal Age	0.003951	[0.003; 0.006]
	Residual	0.005	

3.d - Linear mixed effects regression model: LOG10(FVC)~Height

Fixed effects:

	Estimate	SE	p value	95% CI
(Intercept)	-1.348	0.069	<0.001	[-1.484; -1.20]
Height	0.010	0.001	<0.001	[0.009; 0.011]

Random effects:

Groups	Name	Variance	SD	95% CI
Individual	(Intercept)	0.009	0.097	[0; 0.026]
Individual	Height	0	0.001	[0.001; 0.001]
	Residual	0.007		

3.e - Linear mixed effects regression model: LOG10(FEV1)~Height

Fixed effects:

	Estimate	SE	p value	95% CI
(Intercept)	-1.223	0.046	<0.001	[-1.304; -1.124]
Height	0.008	0.001	<0.001	[0.007; 0.009]

Random effects:

Groups	Name	SD	95% CI
Individual	(Intercept)	0.077	[0; 0.016]
Individual	Height	0.001	[0.001; 0.001]
	Residual	0.003	

3.f - Linear mixed effects regression model: LOG10(FEV1/FVC)~Height

Fixed effects:

	Estimate	SE	p value	95% CI
(Intercept)	0.082	0.058	0.158	[-0.0301; 0.198]
Height	-0.002	0.001	<0.001	[-0.003; -0.001]

Random effects:

Groups	Name	SD	95% CI
Individual	(Intercept)	0	[0; 0.022]
Individual	Height	0	[0; 0]
	Residual	0.006	

Table 4. Linear mixed effects regression model results. SD: Standard Deviation; SE: Standard Error; CI: Confidence Interval

4.a - Linear mixed effects regression model: FVC (in Z-score)~Decimal Age

Fixed effects:

	Estimate	SE	p value	95% CI
(Intercept)	-3.094	0.308	<0.001	[-3.701; -2.520]
Decimal Age	-0.05938	0.02662	0.027	[-0.115; -0.006]

Random effects:

Groups	Name	SD	95% CI
Individual	(Intercept)	0.514	[0 0.261]
Individual	Decimal Age	0.074	[0.064 0.11]
	Residual	0.754	

4.b - Linear mixed effects regression model: FEV1(in Z-score)~Decimal Age

Fixed effects:

	Estimate	SE	p value	95% CI
(Intercept)	-3.61	0.188	<0.001	[-3.88 -3.257]
Decimal Age	-0.098	0.016	<0.001	[-0.14 -0.069]

Random effects:

Groups	Name	Variance	SD	95% CI
Individual	(Intercept)	0.418	0.647	[0 0.137]
Individual	Decimal Age	0.003	0.057	[0.062 0.098]

Residual 0.1715555

4.c - Linear mixed effects regression model: FEV1/FVC(in Z-score)~Decimal Age

Fixed effects:

	Estimate	SE	p value	95% CI
(Intercept)	-1.717	0.303	<0.001	[-2.171 -1.005]
Decimal Age	-0.036	0.022	0.109	[-0.089 0.002]

Random effects:

Groups	Name	Variance	SD	95% CI
Individual	(Intercept)	0.327	0.572	[0 0.477]
Individual	Decimal Age	0	0	[0 0.052]

Residual 0.868

4.d - Linear mixed effects regression model: FVC(in Z-score)~Height

Fixed effects:

	Estimate	SE	p value	95% CI
(Intercept)	-2.276	0.705	0.001	[-3.720 -0.883]
Height	-0.011	0.005	0.030	[-0.021 -0.001]

Random effects:

Groups	Name	SD	95% CI
Individual	(Intercept)	0	[0 0.239]
Individual	Height	0.008	[0.006 0.010]

Residual 0.767

4.e - Linear mixed effects regression model: FEV1(in Z-score)~Height

Fixed effects:

	Estimate	SE	p value	95% CI
(Intercept)	-3.61	0.188	<0.001	[-3.88 -3.257]
Height	-0.098	0.015	<0.001	[-0.14 -0.07]

Random effects:

Groups	Name	SD	95% CI
Individual	(Intercept)	0.647	[0 0.137]
Individual	Height	0.057	[0.062 0.098]

Residual 0.171

4.f - Linear mixed effects regression model: FEV1/FVC (in Z-score)~Height

Fixed effects:

	Estimate	SE	p value	95% CI
(Intercept)	-0.580	0.685	0.398	[-1.875 0.871]
Height	-0.011	0.005	0.02	[-0.021 -0.002]

Random effects:

Groups	Name	SD	95% CI
Individual	(Intercept)	0.564	[0 0.366]
Individual	Height	0	[0.002 0.0056]

Residual 0.857

Figure 6. Relationship between pulmonary function tests and the development of height. Longitudinal data analysed using generalized linear mixed effects models. Population regression (red line) and 95% Confidence Interval (shaded area). Individual predictions are depicted by colored lines.

Figure 6A. FVC (Liters) vs Height (cm). Regression performed on log-transformed FVC

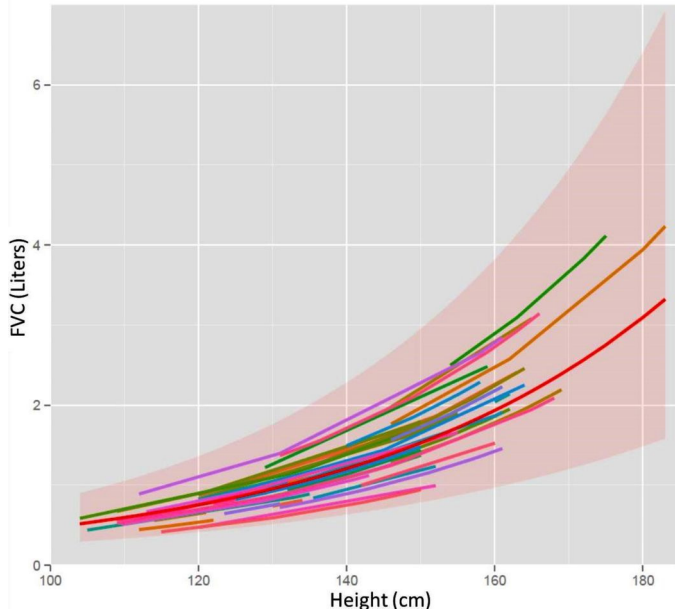


Figure 6B. FEV₁ (Liters) vs Height (cm). Regression performed on log-transformed FEV₁

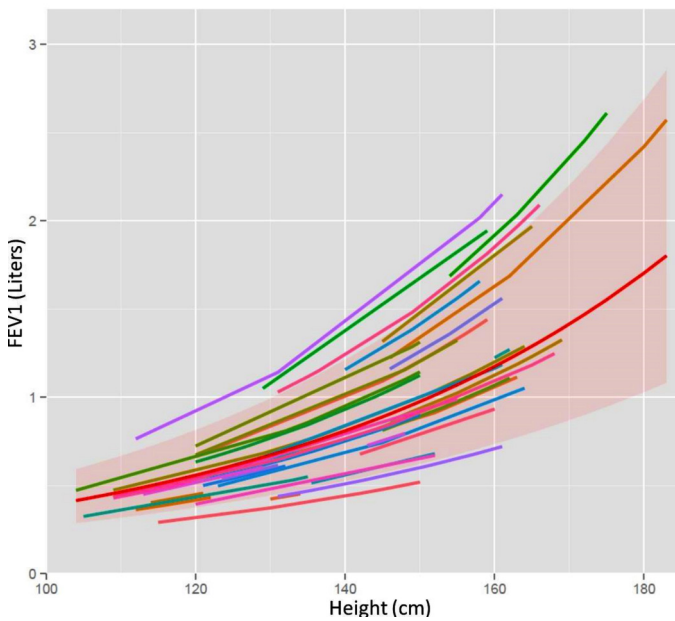


Figure 6C. FEV₁/FVC ratio vs Height (cm).

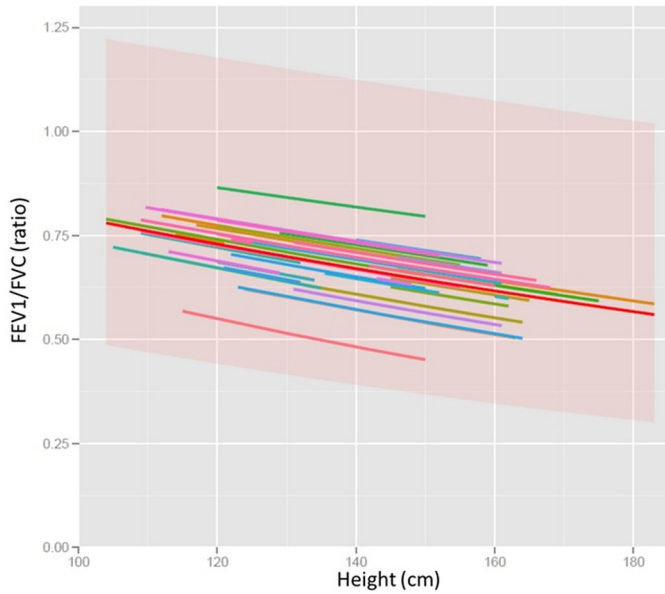


Figure 7. Relationship between pulmonary function expressed as Z-score and the development of height. Longitudinal data analysed using generalized linear mixed effects models. Population regression (red line) and 95% Confidence Interval (shaded area). Individual predictions are depicted by colored lines.

Figure 7A. Z-score FVC (expressed as SD from the mean FVC for height) vs Height (cm).

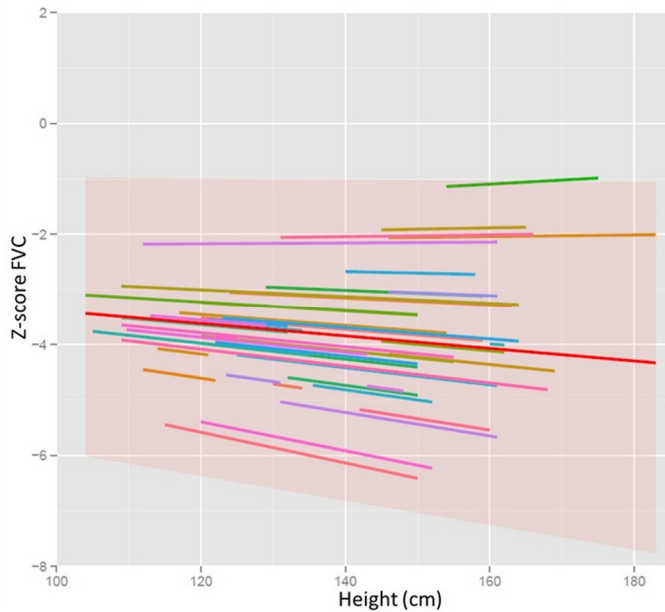


Figure 7B. Z-score FEV1 (expressed as SD from the mean FEV1 for height) vs Height (cm).

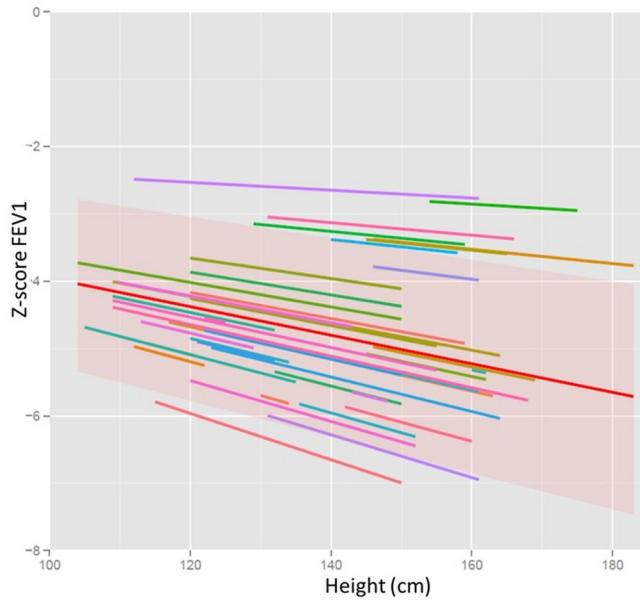


Figure 7C. Z-score FEV1/FVC ratio (expressed as SD from the mean FEV1/ FVC ratio for height) vs Height (cm).

