

Supplementary material

S1

Cross-Sectional data, output axial length to corneal radius ratio

Action	TermName	DF	delDF	FStat	pValue
Start	1	1			
Add	Age	2	1	5246,91	0
Add	Rx	3	1	28588,76	0
Add	Lthk	4	1	2680,11	0
Add	AcD	5	1	2280,27	0
Add	Rx:AcD	6	1	200,93	2,85742E-45
Add	Gender	7	1	98,60	3,74447E-23
Add	Lthk:AcD	8	1	50,96	9,90802E-13
Add	Rx:Lthk	9	1	17,37	3,0941E-05
Add	Gender:AcD	10	1	13,61	0,000225613
Add	Gender:Rx	11	1	21,22	4,12853E-06
Add	Age:AcD	12	1	5,29	0,02136419
Add	Age:Lthk	13	1	7,60	0,005835529

Cross-Sectional data Output Sphere (D)

Action	TermName	DF	delDF	FStat	pValue
Start	1	1			
Add	Age	2	1	4369,53	0
Add	AxICr	3	1	28588,75	0
Add	AcD	4	1	544,42	5,57E-118
Add	Lthk	5	1	327,29	2,90E-72
Add	Gender	6	1	172,18	4,39E-39
Add	Lthk:AcD	7	1	111,04	7,37E-26
Add	Age:AxICr	8	1	39,82	2,89E-10
Add	Age:AcD	9	1	42,07	9,12E-11
Add	Age:Lthk	10	1	11,32	7,68E-4
Add	Age:Gender	11	1	6,32	1,19E-2
Add	AxICr:AcD	12	1	5,48	1,93E-2
Add	Gender:AcD	13	1	3,96	4,67E-2
Add	Gender:AxICr	14	1	4,69	3,03E-2

Longitudinal data Output AxL/Cr

Action	TermName	DF	delDF	FStat	pValue
Start	1	1			
Add	iSph	2	1	238,5641905	3,95E-37
Add	iAxL_Cr	3	2	13,46845481	3,01E-06
Add	iAcD	4	50	3,267640213	5,39E-09

Longitudinal data Output Sphere

Action	TermName	DF	deIDF	FStat	pValue
Start	1	1			
Add	iSph	2	1	593,09	7,06E-65
Add	iLth	3	51	2,04	3,54E-4
Add	iAxL_Cr	4	1	4,17	4,25E-2

S2: Hyperparameters optimization values

Model given number	Model	Optimization*
1	GPR-Sq-exponential	Kernel Scale: 0.058 Sigma: 1.32 Standardized: true
2	GPR-Matern	Kernel Scale: 0.022 Sigma: 17.96 Standardized: false
3	SVR- Linear	Box constraint: 0.0057 Epsilon: 0.00012 Standardized: false
4	SVM - Quadratic	Box constraint: 0.62 Epsilon: 0.0015 Standardized: true
5	SVR- Linear	Box constraint: 0.16 Epsilon: 0.58 Standardized: false

*Bayesian optimization with 30 iterations. Training time limit: false