

## Supplementary Materials

### **The Effects of Repeated Low-Level Red-Light Therapy on the Structure and Vasculature of the Choroid and Retina in Children with Premyopia**

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## **Supplementary Materials Content**

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**Table S1.** Cumulative adjusted mean changes in retinal structure across the entire macular region against different time points in the control group and repeated low-level red-light

(RLRL) groups

**Table S2.** Cumulative adjusted mean changes in retina vascular parameters across the entire macular region against different time points in the control group and repeated low-level red-

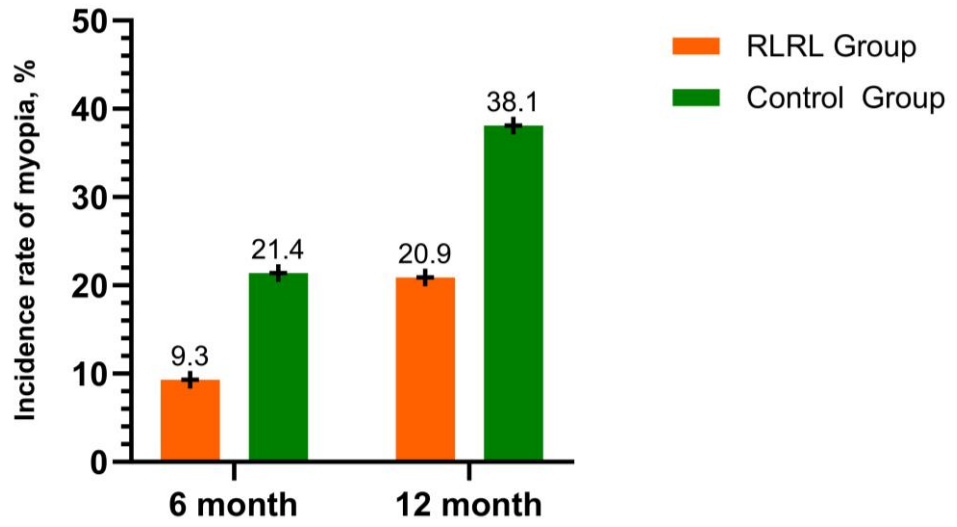
light (RLRL) groups

**Table S3.** Cumulative adjusted mean changes in axial length and cycloplegic spherical equivalent refraction against different time points in the control group and repeated low-level

red-light (RLRL) groups

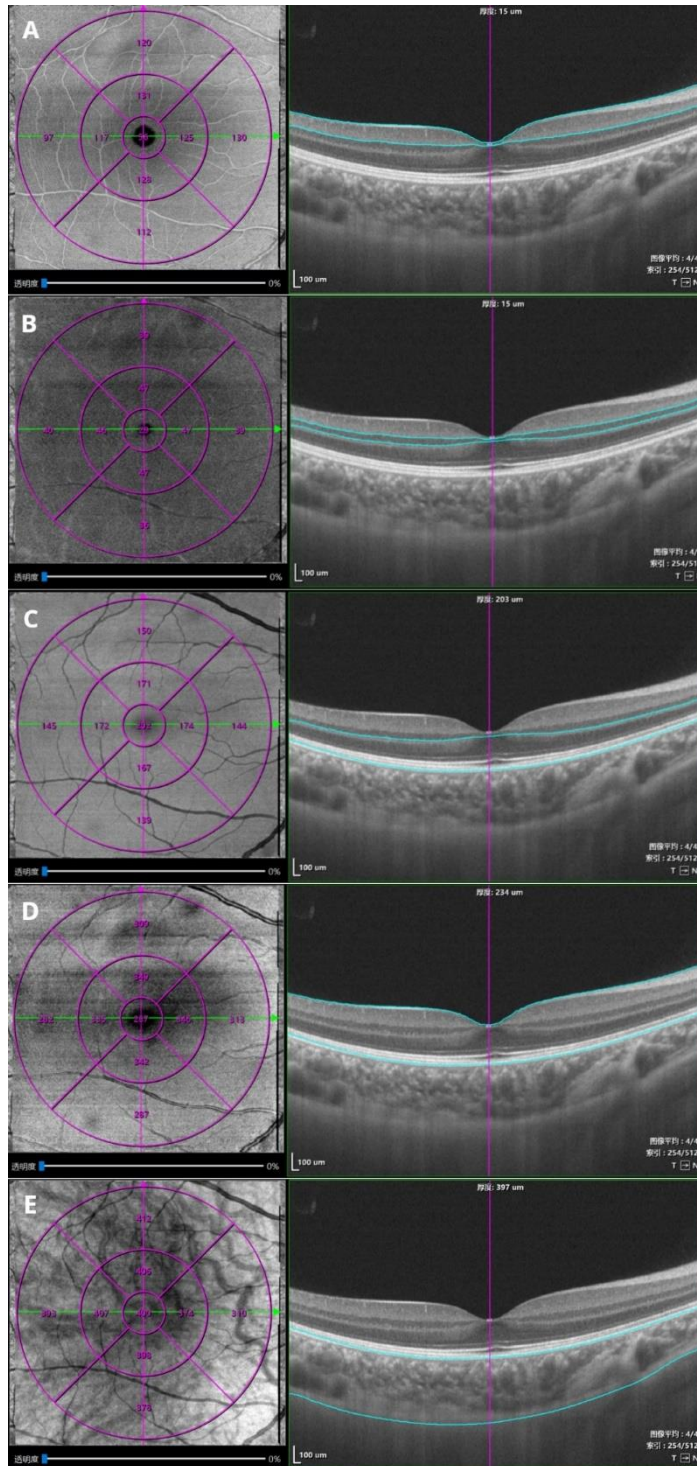
**Table S4.** Cumulative adjusted mean changes in anterior segment parameters against different time points in the control group and repeated low-level red-light (RLRL) groups

This supplementary material has been provided by the authors to give readers additional information about their work.



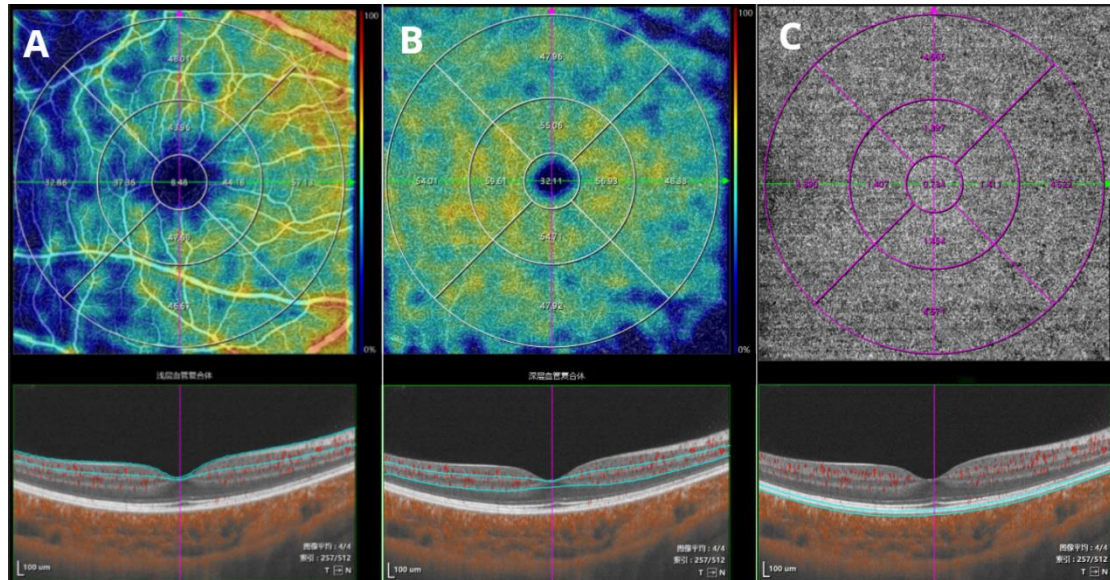
**Figure S1.** Effect of RLRL Intervention on Myopia Incidence

*RLRL*, repeated low-level red-light

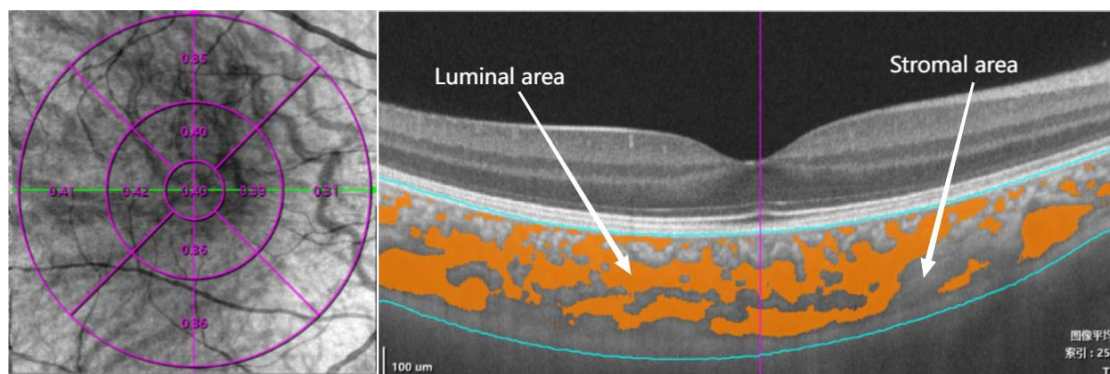


**Figure S2.** Segmentation of retinal layers and choroidal layers. Using SS-OCT/OCT-A, swept-source Optical Coherence Tomography/Optical Coherence Tomography Angiography, the cross sectional image was centered on the fovea: the foveal region, the parafoveal region (ParaF) and the perifoveal region (PeriF). (A)The ganglion cell complex thickness (GCCT) was moved perpendicularly from the inner edge of the nerve fiber layer (NFL) to the outer edge of the inner plexiform layer (IPL). (B)The inner nuclear layer thickness (INLT) was moved perpendicularly from the inner to the outer edge of the INL. (C)The thickness of the outer retinal layer (ORLT) was measured from the inner edge of the outer plexiform layer

(OPL) to the outer edge of the RPE/Bruch's membrane complex.(D) RT was defined as the vertical distance between the internal limiting membrane and the retinal pigment epithelium. (E) CT was defined as the vertical distance between the outer edge of the retinal pigment epithelium (RPE) and the outer edge of the choroid.



**Figure S3.** The value of the microcirculation parameters were calculated automatically by the system. (A) The superficial retinal vascular density (SRVD) was automatically defined by the system as inner boundary membrane to 1/3 cell complex layer, included radioactive capillary network and shallow capillary network. (B) The deep retinal vascular density (DRVD) was automatically defined by the system as 1/3 cell complex layer to the outer plexus layer, included middle capillary network and deep capillary network. (C) The choriocapillaris perfusion area (CCPA) was automatically defined by the system as the portion from the outer boundary of the RPE-Bruch's membrane complex to about 20  $\mu\text{m}$  below the boundary. *RPE*, retinal pigment epithelium



**Figure S4.** The value of the choroidal microvascular parameters were calculated automatically by the system: choroidal vessel volume (CVV).

**Table S1.** Cumulative adjusted mean changes in retinal structure across the entire macular region against different time points in the control group and RLRL groups

Time/visit	Cumulative adjusted mean changes		P value
	RLRL group	CONTROL group	
<b>Change of RT-Fovea,μm</b>			
1 months			0.706
Mean±Std	0.12±2.90	-0.72±10.11	
Median(P25,P75)	-0.09(-1.55,2.02)	0.14(-3.12,1.75)	
3 months			0.662
Mean±Std	-0.23±3.54	0.43±9.90	
Median(P25,P75)	0.38(-2.01,1.25)	0.54(-2.71,3.77)	
6 months			0.833
Mean±Std	0.65±3.18	0.63±10.44	
Median(P25,P75)	0.43(-1.37,2.12)	0.67(-2.58,2.46)	
9 months			0.101
Mean±Std	0.75±3.33	-0.52±11.73	
Median(P25,P75)	0.91(-1.26,2.55)	-1.04(-4.11,2.65)	
12 months			0.335
Mean±Std	-1.72±4.14	-2.97±11.82	
Median(P25,P75)	-2.54(-3.96,0.84)	-2.71(-5.98,-0.05)	

Time/visit	Cumulative adjusted mean changes		P value
	RLRL group	CONTROL group	
<b>Change of RT-ParaF,µm</b>			
1 months			0.418
Mean±Std	0.66±2.39	0.54±5.29	
Median(P25,P75)	0.70(-1.03,2.44)	0.23(-1.29,1.11)	
3 months			0.489
Mean±Std	0.32±2.82	0.40±5.22	
Median(P25,P75)	0.38(-0.84,2.47)	-0.54(-2.90,3.30)	
6 months			0.010*
Mean±Std	0.83±2.92	-0.25±5.10	
Median(P25,P75)	0.69(-0.56,2.47)	-1.04(-3.33,0.42)	
9 months			<0.001*
Mean±Std	0.19±2.98#	-2.82±5.73	
Median(P25,P75)	-0.07(-1.40,2.26)#	-4.25(-6.22,0.02)	
12 months			0.019*
Mean±Std	-2.10±4.15	-3.70±4.87	
Median(P25,P75)	-2.03(-5.16,-0.10)	-5.07(-6.29,-3.36)	
<b>Change of RT-PeriF,µm</b>			
1 months			0.159
Mean±Std	0.42±2.37	-0.62±2.49	

Time/visit	Cumulative adjusted mean changes		P value
	RLRL group	CONTROL group	
Median(P25,P75)	0.20(-1.02,2.27)	0.10(-1.70,1.11)	
3 months			0.006*
Mean±Std	0.50±2.24	-1.28±3.19#	
Median(P25,P75)	0.66(-1.01,2.33)	-1.43(-3.30,1.13)#	
6 months			0.003*
Mean±Std	-0.25±2.76	-2.24±2.99#	
Median(P25,P75)	-0.06(-1.42,1.45)	-2.90(-4.12,0.06)#	
9 months			<0.001*
Mean±Std	-0.64±3.26	-4.50±3.75#	
Median(P25,P75)	-0.76(-2.48,1.52)	-4.24(-6.31,-2.15)#	
12 months			0.022*
Mean±Std	-2.51±3.69	-4.35±3.19#	
Median(P25,P75)	-2.25(-5.45,0.38)	-4.57(-6.30,-2.26)#	
<b>Change of ORLT -Fovea,µm</b>			
Mean change over 1 month			0.257
Mean±Std	0.49±2.62	0.72±5.40	
Median(P25,P75)	0.09(-1.14,1.88)	-0.59(-1.68,1.02)	
Mean change over 3 month			0.757
Mean±Std	0.10±3.69	1.77±6.38#	



Time/visit	Cumulative adjusted mean changes		P value
	RLRL group	CONTROL group	
Median(P25,P75)	0.66(-0.63,1.83)	-0.10(-1.44,2.38)#	
Mean change over 6 month			0.566
Mean±Std	-0.11±2.71	1.26±7.28	
Median(P25,P75)	0.16(-2.51,1.49)	-0.16(-1.55,1.78)	
Mean change over 9 month			0.350
Mean±Std	0.59±3.19	1.09±8.61	
Median(P25,P75)	1.02(-1.71,2.55)	-0.13(-1.98,1.80)	
Mean change over 12 month			0.365
Mean±Std	0.07±3.11	2.05±7.69	
Median(P25,P75)	-0.80(-1.88,2.06)	0.19(-1.18,1.27)	
<b>Change of ORLT -ParaF,µm</b>			
Mean change over 1 month			0.081
Mean±Std	1.03±1.75#	0.41±2.03	
Median(P25,P75)	1.16(-0.24,2.24)#	0.01(-0.93,1.29)	
Mean change over 3 month			0.359
Mean±Std	0.26±2.30	0.05±2.30	
Median(P25,P75)	0.36(-0.89,1.57)	-0.34(-1.80,1.27)	
Mean change over 6 month			0.123
Mean±Std	0.17±2.06	-0.60±2.30	

Time/visit	Cumulative adjusted mean changes		P value
	RLRL group	CONTROL group	
Median(P25,P75)	-0.09(-1.18,1.21)	-0.79(-2.10,0.03)	
Mean change over 9 month			<0.001*
Mean±Std	0.01±1.73	-2.18±3.29#	
Median(P25,P75)	0.02(-1.29,1.20)	-2.09(-3.83,-0.59)#	
Mean change over 12 month			0.489
Mean±Std	-2.13±2.93	-2.58±2.45#	
Median(P25,P75)	-2.03(-4.08,-0.27)	-2.12(-4.56,-1.23)#	
<b>Change of ORLT -PeriF,µm</b>			
Mean change over 1 month			0.148
Mean±Std	0.77±2.53#	-0.12±1.75	
Median(P25,P75)	0.55(-0.79,2.01)#	0.09(-0.83,0.95)	
Mean change over 3 month			0.022*
Mean±Std	0.74±1.92#	-0.28±1.96	
Median(P25,P75)	0.80(-0.44,1.62)#	-0.43(-1.64,0.81)	
Mean change over 6 month			0.001*
Mean±Std	0.36±2.01	-1.11±1.93#	
Median(P25,P75)	0.27(-0.75,1.13)	-1.30(-2.60,0.23)#	
Mean change over 9 month			<0.001*
Mean±Std	0.40±2.38	-2.09±1.95#	

Time/visit	Cumulative adjusted mean changes		P value
	RLRL group	CONTROL group	
Median(P25,P75)	0.38(-0.47,1.66)	-2.03(-3.34,-0.64)#	
Mean change over 12 month			0.010*
Mean±Std	-0.89±2.63	-2.35±1.92#	
Median(P25,P75)	-0.72(-2.43,0.53)	-2.48(-3.70,-1.10)#	
<b>Change of INL-Fovea, μm</b>			
Mean change over 1 month			0.895
Mean±Std	-0.18±1.23	-0.60±2.60	
Median(P25,P75)	-0.03(-0.98,0.52)	-0.13(-0.72,0.34)	
Mean change over 3 month			0.887
Mean±Std	-0.17±1.15	-0.65±2.54#	
Median(P25,P75)	-0.33(-0.90,0.49)	-0.28(-0.93,0.59)#	
Mean change over 6 month			0.151
Mean±Std	0.41±1.27	-0.36±2.42	
Median(P25,P75)	0.27(-0.10,0.75)	0.04(-0.56,0.61)	
Mean change over 9 month			0.299
Mean±Std	0.24±1.00	-0.07±3.36	
Median(P25,P75)	0.33(-0.53,0.81)	-0.08(-0.45,0.66)	
Mean change over 12 month			0.014
Mean±Std	0.45±1.21#	-0.58±2.63	

Time/visit	Cumulative adjusted mean changes		P value
	RLRL group	CONTROL group	
Median(P25,P75)	0.52(-0.22,1.39)#	0.02(-1.38,0.36)	
<b>Change of INL-ParaF, <math>\mu\text{m}</math></b>			
Mean change over 1 month			0.646
Mean $\pm$ Std	-0.41 $\pm$ 2.09	-0.21 $\pm$ 1.77	
Median(P25,P75)	-0.31(-1.95,0.76)	-0.11(-1.03,0.93)	
Mean change over 3 month			0.979
Mean $\pm$ Std	-0.06 $\pm$ 1.60	-0.07 $\pm$ 1.74	
Median(P25,P75)	-0.08(-1.23,0.98)	-0.36(-1.21,1.18)	
Mean change over 6 month			0.308
Mean $\pm$ Std	0.35 $\pm$ 1.73	-0.05 $\pm$ 1.74	
Median(P25,P75)	0.59(-0.58,1.35)	0.01(-0.84,0.43)	
Mean change over 9 month			0.407
Mean $\pm$ Std	0.18 $\pm$ 1.49	-0.14 $\pm$ 1.80	
Median(P25,P75)	-0.01(-1.03,1.21)	-0.10(-1.63,0.63)	
Mean change over 12 month			0.002*
Mean $\pm$ Std	0.92 $\pm$ 2.13#	-0.74 $\pm$ 2.37	
Median(P25,P75)	0.56(-0.35,2.54)#	-0.98(-2.17,0.26)	
<b>Change of INL-PeriF, <math>\mu\text{m}</math></b>			
Mean change over 1 month			0.750

Time/visit	Cumulative adjusted mean changes		P value
	RLRL group	CONTROL group	
Mean±Std	-0.14±1.40	-0.21±1.06	
Median(P25,P75)	-0.44(-0.92,0.55)	-0.04(-0.95,0.50)	
Mean change over 3 month			0.048*
Mean±Std	0.05±1.28	-0.46±0.96#	
Median(P25,P75)	-0.19(-0.75,0.67)	-0.37(-1.14,0.25)#	
Mean change over 6 month			0.146
Mean±Std	-0.01±1.16	-0.37±1.03	
Median(P25,P75)	-0.13(-0.59,0.92)	-0.44(-1.07,0.35)	
Mean change over 9 month			0.280
Mean±Std	0.03±1.27	-0.27±1.10	
Median(P25,P75)	-0.15(-0.87,0.81)	-0.23(-0.83,0.66)	
Mean change over 12 month			0.003*
Mean±Std	0.47±1.36	-0.43±1.03#	
Median(P25,P75)	0.25(-0.62,1.25)	-0.29(-1.06,0.17)#	
<b>Change of RNFL+GCL+IPL-</b>			
<b>Fovea, μm</b>			
Mean change over 1 month			0.677
Mean±Std	-0.19±1.92	-0.83±6.98	
Median(P25,P75)	0.06(-1.01,1.31)	0.18(-0.93,1.10)	

Time/visit	Cumulative adjusted mean changes		P value
	RLRL group	CONTROL group	
Mean change over 3 month			0.465
Mean±Std	-0.14±2.02	-0.69±7.06	
Median(P25,P75)	0.31(-1.59,1.47)	0.51(-1.14,1.80)	
Mean change over 6 month			0.848
Mean±Std	0.35±1.95	-0.26±7.05	
Median(P25,P75)	0.63(-0.90,1.54)	0.57(-1.17,1.85)	
Mean change over 9 month			0.304
Mean±Std	-0.08±2.61	-1.54±9.74	
Median(P25,P75)	0.86(-1.38,1.37)	-0.14(-5.79,1.89)	
Mean change over 12 month			0.274
Mean±Std	-2.22±3.72	-4.44±7.69	
Median(P25,P75)	-2.42(-5.07,1.20)	-3.38(-4.94,-1.54)	
<b>Change of RNFL+GCL+IPL-</b>			
<b>ParaF, μm</b>			
Mean change over 1 month			0.795
Mean±Std	0.03±1.30	0.33±3.39	
Median(P25,P75)	-0.24(-0.73,1.05)	0.07(-0.88,0.77)	
Mean change over 3 month			0.780
Mean±Std	0.12±1.31	0.42±2.99	

Time/visit	Cumulative adjusted mean changes		P value
	RLRL group	CONTROL group	
Median(P25,P75)	-0.07(-1.03,1.13)	0.07(-0.76,1.00)	
Mean change over 6 month			0.197
Mean±Std	0.30±1.47	0.41±3.06	
Median(P25,P75)	0.54(-0.03,1.40)	-0.08(-1.18,1.48)	
Mean change over 9 month			0.107
Mean±Std	-0.00±1.59	-0.49±3.24	
Median(P25,P75)	0.30(-1.12,1.05)	-0.45(-2.18,0.67)	
Mean change over 12 month			0.412
Mean±Std	-0.91±2.02	-0.38±3.18	
Median(P25,P75)	-0.81(-2.72,0.64)	-0.53(-2.80,1.03)	
<b>Change of RNFL+GCL+IPL-</b>			
<b>PeriF, μm</b>			
Mean change over 1 month			0.818
Mean±Std	-0.21±1.76	-0.30±1.46	
Median(P25,P75)	-0.09(-0.72,0.96)	-0.08(-1.27,0.53)	
Mean change over 3 month			0.465
Mean±Std	-0.29±1.66	-0.54±1.68	
Median(P25,P75)	-0.28(-1.20,0.60)	-0.36(-1.59,0.56)	
Mean change over 6 month			0.339

Time/visit	Cumulative adjusted mean changes		P value
	RLRL group	CONTROL group	
Mean±Std	-0.60±1.97	-0.76±1.69	
Median(P25,P75)	-0.21(-1.54,0.71)	-0.61(-2.13,0.22)	
Mean change over 9 month			0.018*
Mean±Std	-1.06±2.21	-2.14±2.20	
Median(P25,P75)	-0.58(-2.41,0.30)	-2.09(-2.84,-0.79)	
Mean change over 12 month			0.347
Mean±Std	-2.08±2.28#	-1.57±2.22	
Median(P25,P75)	-1.75(-3.38,-0.36)#	-1.65(-3.28,-0.01)	

Data are mean ± SD; median (IQR)

Adjusted estimates at each time point were calculated on the basis of GLMM, adjusted for baseline age, gender, group, visit, group \*visit, and corresponding baseline parameter as fixed factors, and subjects as the random factor.

\*Between-group significant differences at  $P < 0.05$

#Within-group significant differences with baseline at  $P < 0.05$

*RT*, retinal thickness of different region; *RNFL*, Retinal Nerve Fiber Layer; *GCL*, ganglion cell layer; *IPL*, inner plexiform layer; *INL*, inner nuclear layer; *ORLT*, Outer retinal layers thickness ; *ParaF*, parafoveal; *PeriF*, perifoveal; *GLMM*, generalized linear mixed model; *SD*, standard deviation; *IQR*, interquartile range



**Table S2.** Cumulative adjusted mean changes in retina vascular parameters across the entire macular region against different time points in the control group and RLRL groups

Time/visit	Cumulative adjusted mean changes		P value
	RLRL group	CONTROL group	
	(N=43)	(N=42)	
<b>Change of DRVD-Fovea, (%)</b>			
1 months			0.828
Mean±Std	-0.24±4.02	-0.04±4.28	
Median(P25,P75)	-0.39(-3.27,2.89)	0.35(-2.21,3.15)	
3 months			0.303
Mean±Std	-0.31±2.73	0.08±4.52	
Median(P25,P75)	-0.31(-2.60,1.98)	0.66(-2.62,2.53)	
6 months			0.101
Mean±Std	-0.54±3.52	0.30±5.27	
Median(P25,P75)	-0.01(-2.31,1.90)	0.86(-1.77,2.58)	
9 months			0.240
Mean±Std	0.02±3.04	1.00±6.78	
Median(P25,P75)	-0.10(-2.36,1.58)	0.51(-1.28,3.20)	
12 months			0.110
Mean±Std	0.16±3.53	1.61±4.4#	
Median(P25,P75)	0.43(-2.59,2.87)	1.48(-0.83,4.42)#	

Time/visit	Cumulative adjusted mean changes		P value
	RLRL group	CONTROL group	
	(N=43)	(N=42)	
<b>Change of DRVD-ParaF, (%)</b>			
1 months			0.181
Mean±Std	-0.43±3.97	0.24±6.73	
Median(P25,P75)	-0.96(-3.62,2.66)	1.68(-2.23,4.08)	
3 months			0.358
Mean±Std	-0.87±3.49	-0.09±4.39	
Median(P25,P75)	-0.99(-3.55,1.28)	0.31(-2.26,3.10)	
6 months			0.112
Mean±Std	-1.09±3.01	-0.35±5.50	
Median(P25,P75)	-0.48(-3.19,1.25)	0.27(-2.56,3.09)	
9 months			0.831
Mean±Std	-0.30±2.91	-0.14±4.10	
Median(P25,P75)	-0.58(-2.26,1.50)	0.48(-2.35,2.65)	
12 months			0.007
Mean±Std	-1.08±3.68	1.25±3.83#	
Median(P25,P75)	-0.65(-3.56,1.59)	0.84(-1.86,4.39)#	
<b>Change of DRVD-PeriF</b>			
1 months			0.393
Mean±Std	0.21±4.22	0.99±3.98	

Time/visit	Cumulative adjusted mean changes		P value
	RLRL group	CONTROL group	
	(N=43)	(N=42)	
Median(P25,P75)	-0.44(-2.84,3.59)	0.69(-1.58,3.82)	
3 months			0.939
Mean±Std	-0.57±4.61	-0.50±4.27	
Median(P25,P75)	-1.20(-3.82,2.31)	-0.33(-3.90,1.94)	
6 months			0.982
Mean±Std	-0.12±3.95	-0.10±4.36	
Median(P25,P75)	0.02(-2.69,2.35)	0.10(-2.79,2.59)	
9 months			0.697
Mean±Std	0.60±4.53	0.50±4.97	
Median(P25,P75)	1.07(-1.18,2.58)	0.99(-0.72,3.54)	
12 months			0.247
Mean±Std	1.72±4.62#	2.38±3.82#	
Median(P25,P75)	0.91(-1.20,3.89)#	2.14(-0.34,5.03)#	
<b>Change of SRVD-Fovea</b>			
1 months			0.397
Mean±Std	0.10±2.40	-0.50±3.11	
Median(P25,P75)	0.28(-0.96,1.96)	-0.09(-2.13,1.27)	
3 months			0.433
Mean±Std	-0.20±2.18	-0.12±2.94	

Time/visit	Cumulative adjusted mean changes		P value
	RLRL group	CONTROL group	
	(N=43)	(N=42)	
Median(P25,P75)	-0.21(-2.03,1.29)	0.41(-0.89,1.62)	
6 months			0.591
Mean±Std	-0.14±2.38	-0.29±3.85	
Median(P25,P75)	0.08(-1.81,1.41)	0.46(-0.84,1.87)	
9 months			0.938
Mean±Std	0.55±2.32	0.67±3.46	
Median(P25,P75)	0.99(-0.64,2.38)	0.66(-0.92,1.83)	
12 months			0.723
Mean±Std	0.74±2.57	0.77±3.09	
Median(P25,P75)	0.71(-0.80,2.93)	0.71(-0.06,2.01)	
<b>Change of SRVD-ParaF</b>			
1 months			0.181
Mean±Std	-1.19±4.91	0.14±4.36	
Median(P25,P75)	-1.42(-3.57,2.02)	-0.13(-2.69,2.60)	
3 months			0.126
Mean±Std	-1.00±4.36	0.46±4.80	
Median(P25,P75)	-0.38(-4.70,1.39)	-0.12(-1.48,2.60)	
6 months			0.649
Mean±Std	0.02±3.61	0.14±5.31	

Time/visit	Cumulative adjusted mean changes		P value
	RLRL group	CONTROL group	
	(N=43)	(N=42)	
Median(P25,P75)	-0.33(-2.81,2.53)	0.16(-2.43,2.88)	
9 months			0.233
Mean±Std	0.25±3.49	1.33±4.36#	
Median(P25,P75)	0.81(-1.93,2.11)	1.39(-0.75,2.95)#	
12 months			0.009*
Mean±Std	1.10±4.30	3.79±4.75#	
Median(P25,P75)	1.93(-1.62,3.37)	3.53(0.04,7.10)#	
<b>Change of SRVD-PeriF</b>			
1 months			0.828
Mean±Std	-0.29±3.03	-0.15±2.65	
Median(P25,P75)	-0.27(-2.02,1.36)	-0.22(-1.54,0.89)	
3 months			0.552
Mean±Std	-0.51±3.13	-0.90±2.98#	
Median(P25,P75)	-0.21(-3.16,1.34)	-0.97(-2.34,0.01)#	
6 months			0.498
Mean±Std	-0.27±2.51	-0.42±2.44	
Median(P25,P75)	0.05(-2.13,1.68)	-0.26(-2.02,1.21)	
9 months			0.381
Mean±Std	0.08±2.41	-0.38±2.50	

Time/visit	Cumulative adjusted mean changes		P value
	RLRL group	CONTROL group	
	(N=43)	(N=42)	
Median(P25,P75)	0.59(-1.07,1.50)	-0.66(-1.67,1.18)	
12 months			0.002*
Mean±Std	-0.35±2.27	1.56±3.02#	
Median(P25,P75)	-0.14(-1.60,0.86)	1.20(0.45,3.21)#	

Data are mean ± SD; median (IQR)

Adjusted estimates at each time point were calculated on the basis of GLMM, adjusted for baseline age, gender, group, visit, group \*visit, and corresponding baseline parameter as fixed factors, and subjects as the random factor.

\*Between-group significant differences at  $P < 0.05$

#Within-group significant differences with baseline at  $P < 0.05$

*RLRL*, repeated low-level red-light; *SRVD*, superficial retinal vascular density; *DRVD*, deep retinal vascular density; *ParaF*, parafoveal; *PeriF*, perifoveal; *SD*, standard deviation; *IQR*, interquartile range

**Table S3.** Cumulative adjusted mean changes in axial length and cycloplegic spherical equivalent refraction against different time points in the control group and RLRL groups

Time/visit	Cumulative adjusted mean changes		P value
	RLRL group (N=43)	CONTROL group (N=42)	
<b>Change of AL, mm</b>			
1 months			<0.001*
Mean±Std	-0.02±0.04#	0.02±0.03#	
Median(P25,P75)	-0.01(-0.04,0.00)#	0.02(0.00,0.04)#	
3 months			<0.001*
Mean±Std	-0.01±0.07	0.07±0.06#	
Median(P25,P75)	-0.01(-0.05,0.03)	0.05(0.03,0.09)#	
6 months			<0.001*
Mean±Std	0.03±0.11	0.14±0.08#	
Median(P25,P75)	0.02(-0.03,0.09)	0.13(0.07,0.20)#	
9 months			<0.001*
Mean±Std	0.06±0.14#	0.21±0.09#	
Median(P25,P75)	0.05(-0.01,0.16)#	0.20(0.14,0.31)#	
12 months			<0.001*
Mean±Std	0.09±0.21	0.28±0.12#	
Median(P25,P75)	0.09(-0.01,0.19)	0.32(0.16,0.39)#	
<b>Change of SE, D</b>			

6 months			0.004*
Mean±Std	0.03±0.37	-0.21±0.35#	
Median(P25,P75)	0.00(-0.25,0.25)	-0.19(-0.50,0.00)#	
12 months			0.002*
Mean±Std	-0.11±0.44	-0.42±0.36#	
Median(P25,P75)	-0.13(-0.50,0.25)	-0.38(-0.63,-0.13)#	

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Data are mean ± SD; median (IQR)

Adjusted estimates at each time point were calculated on the basis of GLMM, adjusted for baseline age, gender, group, visit, group \*visit, and corresponding baseline parameter as fixed factors, and subjects as the random factor.

\*Between-group significant differences at  $P < 0.05$

#Within-group significant differences with baseline at  $P < 0.05$

*RLRL*, repeated low-level red-light; *AL*, axial length; *SE*, spherical equivalent



**Table S4.** Cumulative adjusted mean changes in anterior segment parameters against different time points in the control group and RLRL groups

Time/visit	Cumulative adjusted mean changes		P value
	RLRL group (N=43)	CONTROL group (N=42)	
<b>Change of ACD, mm</b>			
1 months			0.676
Mean±Std	-0.04±0.07#	-0.04±0.10#	
Median(P25,P75)	-0.03(-0.08,0.00)#	-0.05(-0.11,0.00)#	
3 months			0.526
Mean±Std	-0.03±0.09#	-0.04±0.10#	
Median(P25,P75)	-0.02(-0.07,0.03)#	-0.04(-0.11,0.02)#	
6 months			0.889
Mean±Std	-0.02±0.07	-0.02±0.09	
Median(P25,P75)	0.00(-0.06,0.03)	-0.02(-0.07,0.04)	
9 months			0.908
Mean±Std	-0.00±0.07	-0.01±0.10	
Median(P25,P75)	0.00(-0.06,0.04)	-0.01(-0.08,0.06)	
12 months			0.805
Mean±Std	-0.01±0.08	-0.00±0.11#	
Median(P25,P75)	-0.01(-0.05,0.04)	0.00(-0.07,0.08)#	
<b>Change of Kf, D</b>			

1 months			0.864
Mean±Std	-0.01±0.11	-0.01±0.15	
Median(P25,P75)	-0.02(-0.06,0.04)	0.01(-0.06,0.07)	
3 months			0.169
Mean±Std	-0.01±0.12	0.02±0.17	
Median(P25,P75)	-0.02(-0.06,0.05)	0.03(-0.06,0.08)	
6 months			0.132
Mean±Std	0.02±0.14	-0.02±0.14	
Median(P25,P75)	0.00(-0.05,0.09)	-0.02(-0.12,0.06)	
9 months			0.718
Mean±Std	-0.05±0.24#	-0.02±0.20	
Median(P25,P75)	-0.02(-0.10,0.08)#	0.00(-0.07,0.05)	
12 months			0.842
Mean±Std	-0.03±0.11	-0.02±0.19	
Median(P25,P75)	-0.03(-0.10,0.04)	-0.03(-0.11,0.07)	
<b>Change of LT,mm</b>			
1 months			0.996
Mean±Std	0.02±0.06	-0.08±0.59	
Median(P25,P75)	0.02(-0.01,0.04)	0.02(-0.01,0.05)	
3 months			0.753
Mean±Std	-0.08±0.61	0.18±0.77	
Median(P25,P75)	0.00(-0.02,0.04)	0.01(-0.02,0.06)	

6 months			0.798
Mean±Std	-0.00±0.06	0.08±1.24	
Median(P25,P75)	0.00(-0.05,0.02)	0.01(-0.06,0.04)	
9 months			0.524
Mean±Std	-0.00±0.07	0.27±0.95#	
Median(P25,P75)	0.00(-0.04,0.05)	0.01(-0.04,0.06)#	
12 months			0.423
Mean±Std	-0.11±0.54	-0.41±1.12#	
Median(P25,P75)	-0.03(-0.07,0.03)	-0.01(-0.11,0.01)#	

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Data are mean ± SD; median (IQR);

Adjusted estimates at each time point were calculated on the basis of GLMM, adjusted for baseline age, gender, group, visit, group \*visit, and corresponding baseline parameter as fixed factors, and subjects as the random factor.

\*Between-group significant differences at  $P < 0.05$

#Within-group significant differences with baseline at  $P < 0.05$

*RLRL*, repeated low-level red-light; *ACD*, anterior chamber depth; *Kf*, flat keratometry; *LT*, lens thickness; *D*, diopter; *SD*, standard deviation; *IQR*, interquartile range; *GLMM*, generalized linear mixed model