# Effect of Repeated Low-level Red Light on Myopia Prevention Among Children in China With Premyopia
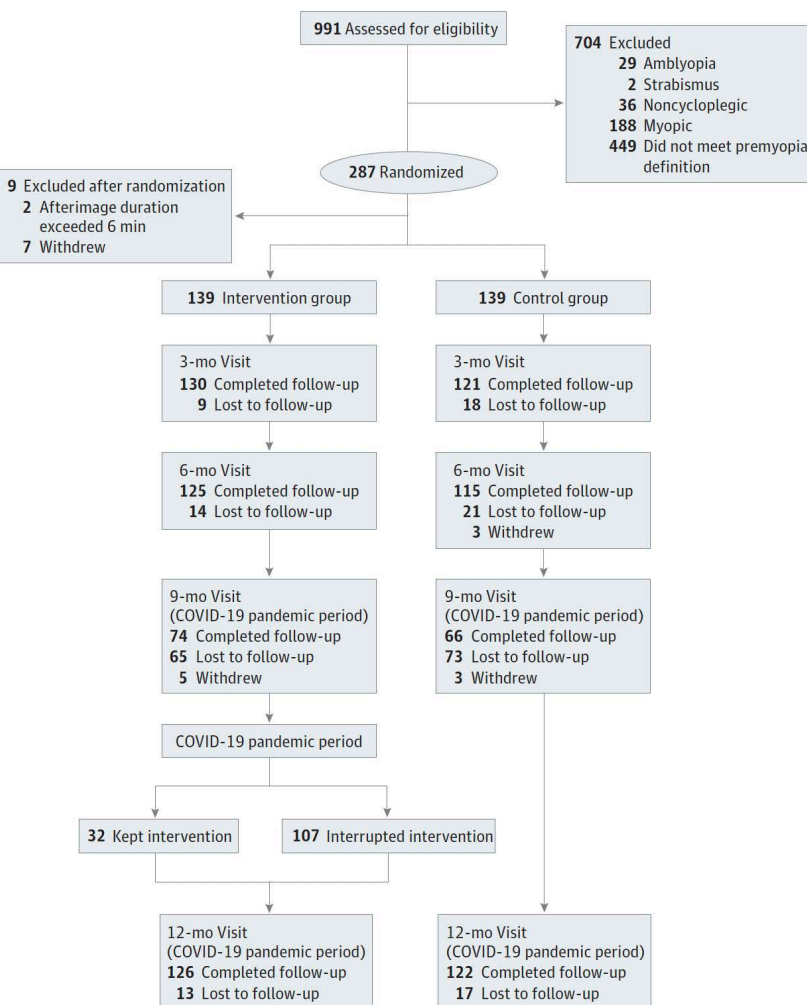## A Randomized Controlled Trial

Xiangui He PhD | Jingjing Wang PhD | Zhuoting Zhu PhD | Kaidi Xiang MD | Xinzi Zhang MD | Bo Zhang MS | Jun Chen PhD | Jinliuxing Yang PhD | Linlin Du MPH | Chunjin Niu BS | Mei Leng BS | Jiannan Huang PhD | Kun Liu MD | Haidong Zou MD | Mingguang He PhD | Xun Xu MD

## Purpose:

To investigate the efficacy and safety of RLRL in preventing incident myopia among children with premyopia.

## Method:



991 Assessed for eligibility

704 Excluded
29 Amblyopia
2 Strabismus
36 Noncycloplegic
188 Myopic
449 Did not meet premyopia definition

287 Randomized

9 Excluded after randomization
2 Afterimage duration exceeded 6 min
7 Withdrew

139 Intervention group

139 Control group

3-mo Visit
130 Completed follow-up
9 Lost to follow-up

3-mo Visit
121 Completed follow-up
18 Lost to follow-up

6-mo Visit
125 Completed follow-up
14 Lost to follow-up

6-mo Visit
115 Completed follow-up
21 Lost to follow-up
3 Withdrew

9-mo Visit
(COVID-19 pandemic period)
74 Completed follow-up
65 Lost to follow-up
5 Withdrew

9-mo Visit
(COVID-19 pandemic period)
66 Completed follow-up
73 Lost to follow-up
3 Withdrew

COVID-19 pandemic period

32 Kept intervention

107 Interrupted intervention

12-mo Visit
(COVID-19 pandemic period)
126 Completed follow-up
13 Lost to follow-up

12-mo Visit
(COVID-19 pandemic period)
122 Completed follow-up
17 Lost to follow-up

## Results:

The 12-month incidence of myopia was 40.8% in the RLRL group and 6.3% in the control group, a relative 33.4% reduction in incidence.

For children who did not have treatment interruption secondary to the COVID-9 pandemic, the incidence was 28.1%, a relative 54.1% reduction in incidence.

The RLRL group also had reduced myopic shifts in terms of AL (0.30mm vs 0.47mm) and SER (-0.35D vs -0.76D).

No adverse events or structural damage on OCT were noted.

To find out more about the Repeated Low-Level Red-Light Therapy available via Eyerising, get in touch with your local Eyerising International team today.

info@eyerisinginternational.com | www.eyerisinginternational.com

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## Outcome:

Table 1. Refractive and Biometric Outcomes at 12-Month Follow-up (Intention-to-Treat Analysis)

| Outcome | Students, % (No./total No.) | | Risk difference, (95% CI)[b] | Relative risk (95% CI)[c] | Relative efficacy[d] | P value[e] |
| --- | --- | --- | --- | --- | --- | --- |
| | Intervention[a] | Control | | | | |
| Incidence of myopia, % | 40.8 (49/120) | 61.3 (68/111) | 20.4 (7.9 to 33.1) | 0.67 (0.51 to 0.86) | 33.4 | .003 |
| Mean (SD), change | | | | | | |
| SER, D | −0.35 (0.54) | −0.76 (0.60) | −0.41 (−0.56 to -0.26) | NA | 53.9 | <.001 |
| AL, mm | 0.30 (0.27) | 0.47 (0.25) | 0.17 (0.11 to 0.23) | NA | 36.2 | <.001 |

Abbreviations: AL, axial length; D, diopters; NA, not applicable; SER, spherical equivalent refraction.

[a] The intervention group included those who continued the intervention and those with interrupted intervention.
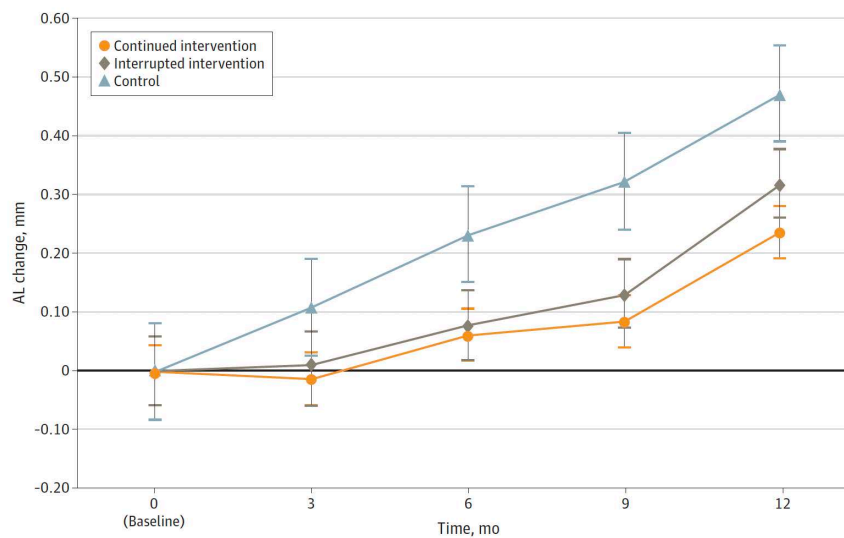
[b] Risk difference, absolute efficacy = value in control group − value in intervention group.

[c] Relative risk = value in intervention group/value in control group.

[d] Relative efficacy = (value in control group − value in intervention group)/value in control group.

[e] The *t* test was used for change of AL and SER, and the $\chi^2$ test was used for incidence.

Figure 2. Axial Length (AL) Change Between the Intervention and Control Groups Over 12 Months