Increasing outdoor activities reduce incident myopia

With the support by the National Natural Science Foundation of China and the State Key Laboratory in Ophthalmology of China, the research team led by Prof. He MingGuang (**何明光**) at the State Key Laboratory of Ophthalmology, Zhongshan Ophthalmic Center, Sun Yat-sen University, reported recently on the efficacy of increasing time spent outdoors at school in preventing incident myopia among school-aged children in China. The paper was published in *JAMA* (2015, 314: 1142—1148).

Myopia has been reaching epidemic levels among high school graduates in East Asia. No effective interventions for prevention of myopia are available currently. Time spent outdoors has been suggested as a protective factor for school myopia, however, its causality and dose would need to confirm in randomized trials. Using cluster randomized design, the study randomized 952 students to the intervention group and 951 students to the control group. In the intervention group, one additional 40-minute class of supervised outdoor activities was added to each school day, whereas in the control group the children just continued their usual pattern of activities. This study reported that the intervention resulted in absolute 9.1% reduction of incident myopia after 3 years (30.4% in the intervention group vs 39.5% in the control group, $P<0.001$). Analysis of 3-year change in spherical equivalent showed consistent findings that the intervention group had less myopia shift compared with the control group (−1.42 diopters vs −1.59 diopters, $P=0.04$). The study for the first time proves that a 40 minute increase in the time spent outdoor will significantly reduce the incidence rate of myopia.

Table Incidence of myopia, refractive and axial length changes over the 3 years

	Intervention Group	Control Group	Difference (95% CI)	*P* Value
Cumulative incidence of myopia	259/853 (30.4)[b]	287/726 (39.5)[b]	−9.1 (−14.1 to −4.1)[c]	<.001
Cumulative change, mean (95% CI)[d]				
Spherical equivalent refraction, D	−1.42 (−1.58 to −1.27)	−1.59 (−1.76 to −1.43)	0.17 (0.01 to 0.33)	.04
Axial length, mm	0.95 (0.91 to 1.00)	0.98 (0.94 to 1.03)	−0.03 (−0.07 to 0.003)	.07

[a] The calculation on all outcomes was based on right eye data only.
[b] Cumulative number of cases of incident myopia/number of analyzed participants (%).
[c] Expressed as a percentage and calculated using exact unconditional methods based on the Farrington-Manning score statistic.
[d] Derived from mixed models.