

# Comparison of Myopia Progression in Individuals Wearing Defocus Incorporated Multiple Segments (DIMS) Spectacle Lenses for Eight Years versus Shorter Durations

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## Purpose

To evaluate the myopia control effectiveness in participants who used Defocus Incorporated Multiple Segments (DIMS) spectacle lenses for 8 years compared to those who wore them for shorter durations.

## Methods

This study is a retrospective-prospective analysis of data from participants who completed an initial 2-year Randomized Controlled Trial (RCT) and subsequent 6-year follow-up.<sup>1-3</sup> All participants from DIMS as well as from control group (n=90) were invited for an eye examination in the 8th year after joining the RCT.

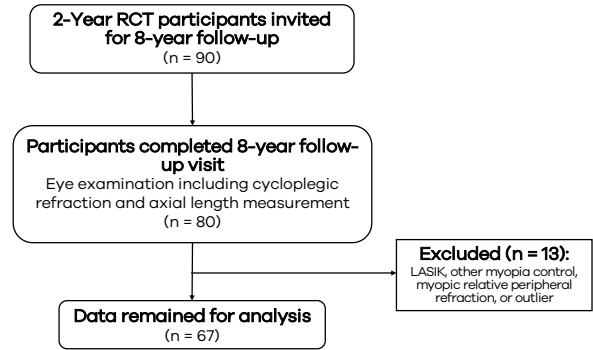


Figure 1: Flowchart of Experimental Design

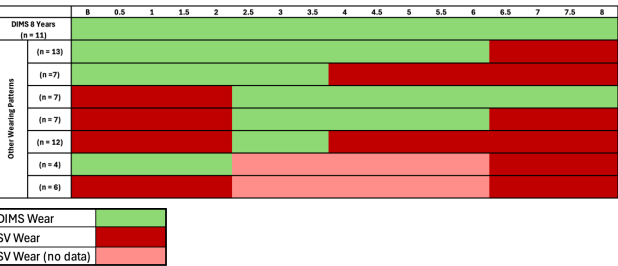


Figure 2: Lens Wear Patterns Over 8 Years Across Study Groups

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All authors declare no direct commercial relationships related to this research, except the following: Lam CSY is the inventor of the DIMS lens and receives royalties from HOYA Corporation. Leung TW receives royalties from HOYA Corporation. Vlasak N is an employee of HOYA Corporation.

## Results

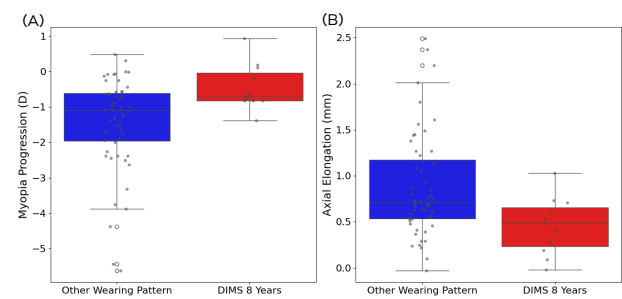


Figure 3: Comparison of myopia progression (A) and axial elongation (B) between DIMS spectacles wearing patterns. 8-year DIMS (Red): Wore DIMS spectacles for 8 years; Other Wearing Pattern (Blue): Wore DIMS spectacles for < 8 years, see figure 1 for the detailed pattern. Each grey dot represents an individual data point, while box plots show the median, quartiles, and range of values.

The 8-year DIMS group demonstrates less myopia progression and less axial elongation compared to Other Wearing Pattern group (unpaired t-test,  $p < 0.02$ ).

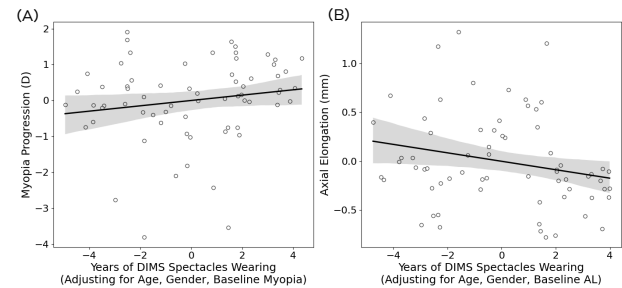


Figure 4: Relationship between years of DIMS spectacles wear and myopia progression (A) and axial elongation (B) after adjusting for age, gender, and baseline myopia or axial length. Each circle represents an individual subject, with the regression line and 95% confidence interval (shaded area) displayed.

For myopia progression, a weak positive trend was observed ( $\beta = 0.074$ ,  $p = 0.192$ ), with the regression model accounting for 22.4% of variance ( $R^2 = 0.224$ ). For axial elongation, a negative trend approaching significance was observed ( $\beta = -0.043$ ,  $p = 0.066$ ), with the model explaining 29.4% of variance ( $R^2 = 0.294$ ). While trends suggest longer DIMS spectacles wear may be associated with reduced axial elongation, neither relationship reached statistical significance at the  $p < 0.05$  threshold.

## Results

### Qualitative Analysis of User Experiences with DIMS Spectacles

#### Reasons for Participation

- Parental concern about myopia progression
- Recommendation by others
- Access to free eye examinations and spectacles
- Personal curiosity and hope

#### Daily Usage Patterns

- Consistently removed during:
- Sleeping and showering
  - Swimming
  - Contact sports (basketball, football)

#### Visual Experience

- Clear central vision when looking straight ahead
- Some blurring and distortion in peripheral vision
- Generally suitable for daily life activities

#### Comfort & Adaptation

- Adaptation period ranged from 1-2 days to a few weeks
- Comfortable during daily activities

#### Social Experience

- Limited awareness from others about the special nature of the spectacles
- No significant impact on self-image or social interactions

#### Maintenance Practices

- Cleaning methods: Water and soap; Lens cloths; Clothing or wet wipes
- Durability: Mostly durable and resistant to scratches

#### Satisfaction & Recommendations

Overall satisfaction: High  
Willingness to recommend: High

## Conclusions

1. Continuous DIMS spectacle lens wear (8-year DIMS group) demonstrated significantly reduced myopia progression and axial elongation compared to all other wear patterns, confirming the sustained efficacy of this intervention over an extended period.
2. Longer DIMS spectacles wear appears to be associated with reduced axial elongation, but the relationship was not statistically significant.
3. Qualitative analysis revealed high user satisfaction and acceptance of DIMS spectacles. Initial adaptation periods were short (1-2 days to a few weeks), with most participants reporting comfortable wear during daily activities and minimal social impact. Importantly, no long-term safety concerns were identified over the 8-year follow-up period.

These results provide evidence for the effectiveness and acceptability of DIMS spectacle lenses as a safe, non-invasive myopia control strategy in children, with maximum benefits achieved through continuous, long-term wear beginning at early stages of myopia development.

## References

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