

Eight Years of Wearing Defocus Incorporated Multiple Segments (DIMS) Spectacle Lenses: User Experience and Myopia Control Outcomes

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Background

- To evaluate the long-term myopia control effect and user experience in participants wearing Defocus Incorporated Multiple Segments (DIMS) spectacle lenses.

Methods

- Participants who completed the 2-year Randomized Clinical Trial (RCT) and 6-year follow-up study (n=90)¹ were invited for an eye examination in the 8th year after joining the RCT.
- The participants' ages ranged from 16 to 21 years old.
- 75 participants were interviewed either by phone or face-to-face about their current optical correction and their experience of using the DIMS spectacle lenses prior to their visit for eye examination.
- 63 participants completed the 8-year follow-up visit, cycloplegic refraction, and axial length were measured.
- Participants were grouped into 4 groups according to their lens wear experience in the previous 6 years of follow-up:
 - Group 1: wore DIMS spectacle lenses for 6 years**
 - Group 2: wore DIMS spectacles for the first 3.5 years and SV spectacles afterwards**
 - Group 3: wore SV spectacles in the first 2 years and switched to DIMS spectacles**
 - Group 4: wore SV spectacles in the first 2 years and switched to DIMS for 1.5 years and then SV spectacles again**
- The lens wear situation in the 8th year is shown in Table 1, and the lens wear situation over 8 years is shown in Figure 1.

Table 1. Lens wear situation in the 8th year of four groups.

	Total	DIMS	SV	Treatment CL	Treatment spectacle lens
Group 1	28	14	13	1	
Group 2	7		7		
Group 3	15	7	7		1
Group 4	13	1	12		

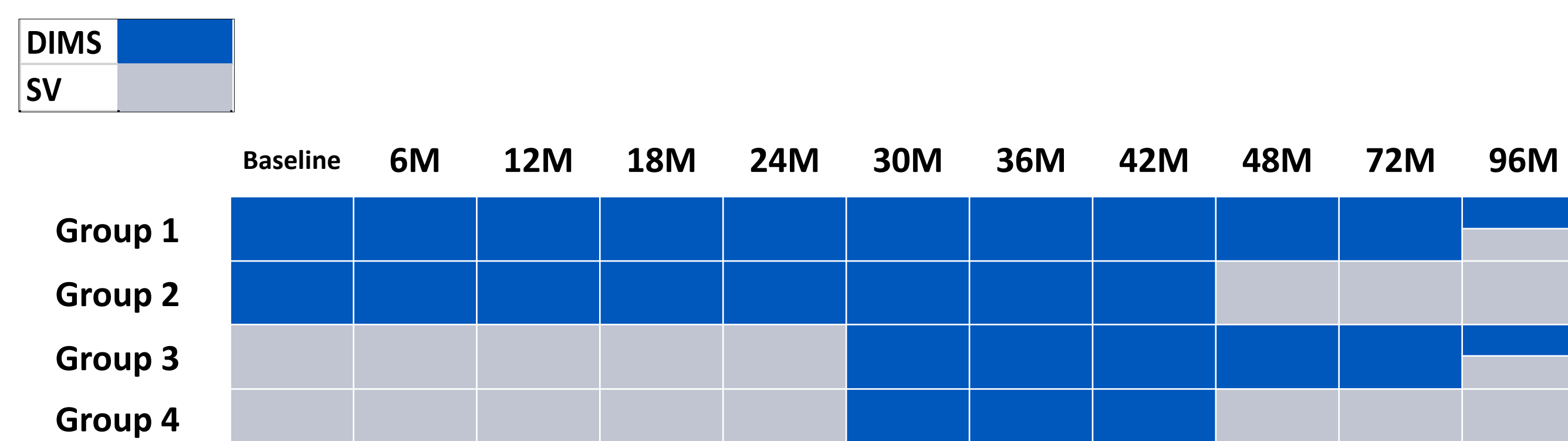


Figure 1. Lens wear situation over 8 years of four groups.

Results

- Table 2 shows the user experience of participants toward DIMS spectacles.
- Myopia progression and axial elongation of Group 1 who continued DIMS spectacle lens wear for 8 years (n=14) are shown in Figure 2 and 3.
- Three subjects (ms-002, ms-008, ms-0097) were excluded from analyses due to the presence of myopic relative peripheral refraction (RPR) at baseline, they were 8 to 9 years old at the start of the RCT.
- Previous studies showed that children with myopic RPR did not experience effective myopia control over 6 years. Given the small sample size in the 8-year study, these outliers were excluded.
- There was a statistically significant difference in axial length elongation between children in Group 1 who wore DIMS (0.081±0.037 mm) lenses and those who wore SV (0.205±0.040 mm) from 72 to 96 months (mean difference: -0.15±0.04 mm, p=0.004).
- While differences in myopia progression were observed, they were not statistically significant (mean difference: 0.27±0.20 D, p=0.19).

Table 2. User experience of participants towards the DIMS spectacle lenses.

	Group 1 (n=34)	Group 2 (n=11)	Group 3 (n=14)	Group 4 (n=16)
Are you still using DIMS lens?	61.8% YES 38.2% NO	9.1% YES 90.9% NO	57.1% YES 42.9% NO	100% NO
How many years have you worn DIMS lens (yrs)	8	4	6	3
If you are not wearing the DIMS lens, what are you using now?	<ul style="list-style-type: none"> 29.4% SV spectacles (include 2 DIMS lens wearer, who occasionally wear SV lenses) 11.8% SV contact lens 2.9% MC contact lens 	100% SV spectacles	<ul style="list-style-type: none"> 28.6% SV spectacle 14.3% SV contact lens 	<ul style="list-style-type: none"> 93.3% SV spectacle 6.7% refractive surgery
If you stopped using the DIMS lens, what is the main reason?	<ul style="list-style-type: none"> 42.7% no free lenses 14.3% too expensive 28.7% change to other lens type 14.3% no need anymore 	<ul style="list-style-type: none"> 45.5% no free lenses 27.3% too expensive 27.3% change to other lens type 	<ul style="list-style-type: none"> 16.7% no free lens 49.9% too expensive 16.7% change to other lens types 16.7% visually not comfortable 	<ul style="list-style-type: none"> 50% no free lenses 18.8% too expensive 18.8% change to other lens type 6.3% visually not comfortable 6.3% no need anymore
Are you satisfied with the benefits of using the DIMS lens?	100% YES	100% YES	100% YES	80% YES 20% NO
Do you think participating in the trial helped you to develop the awareness of controlling myopia?	100% YES	90.9% YES 9.1% NO	100% YES	93.3% YES 6.7% NO

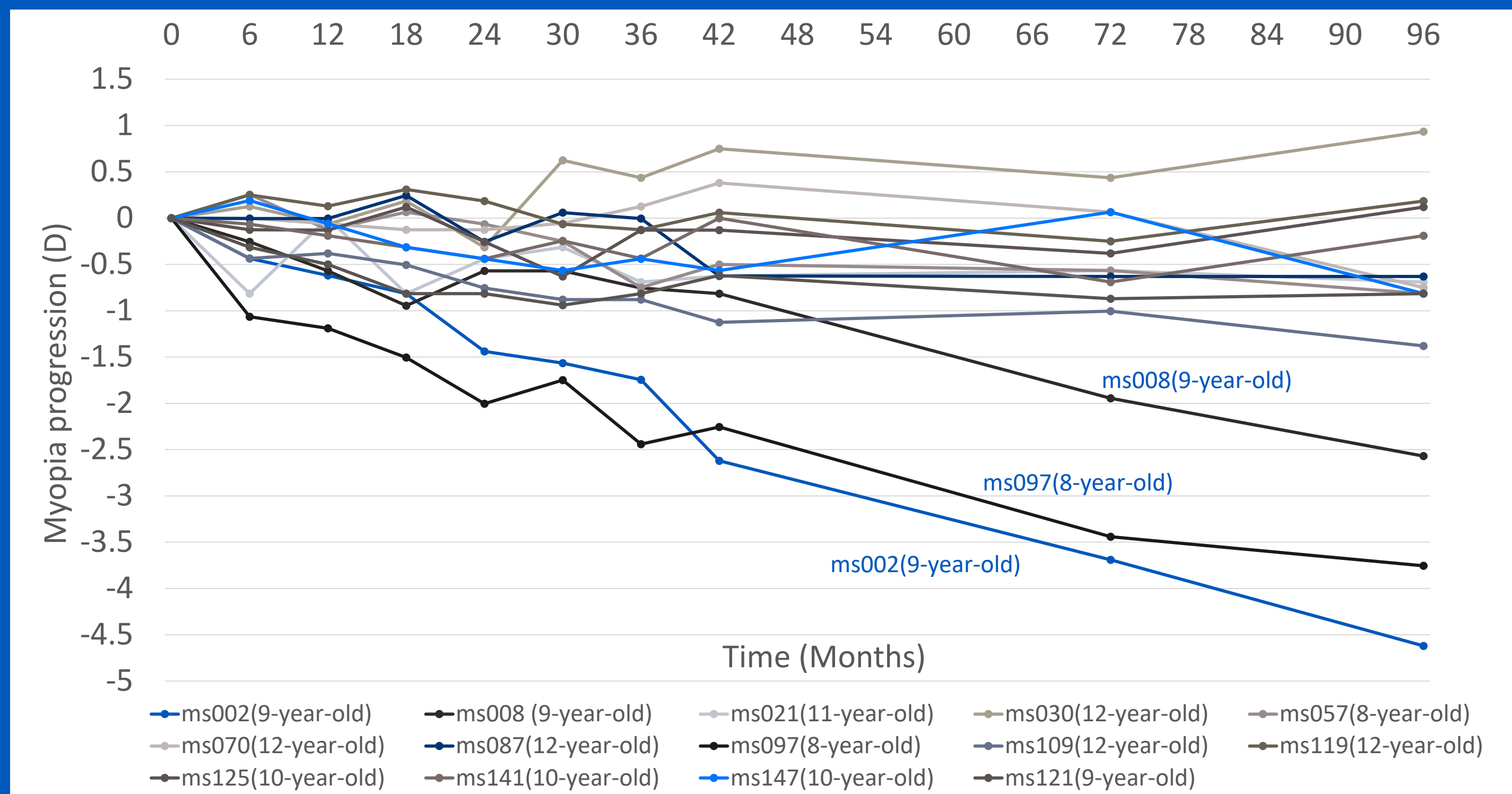


Figure 2. Individual myopia progression of Group 1 who wore DIMS over 8 years.

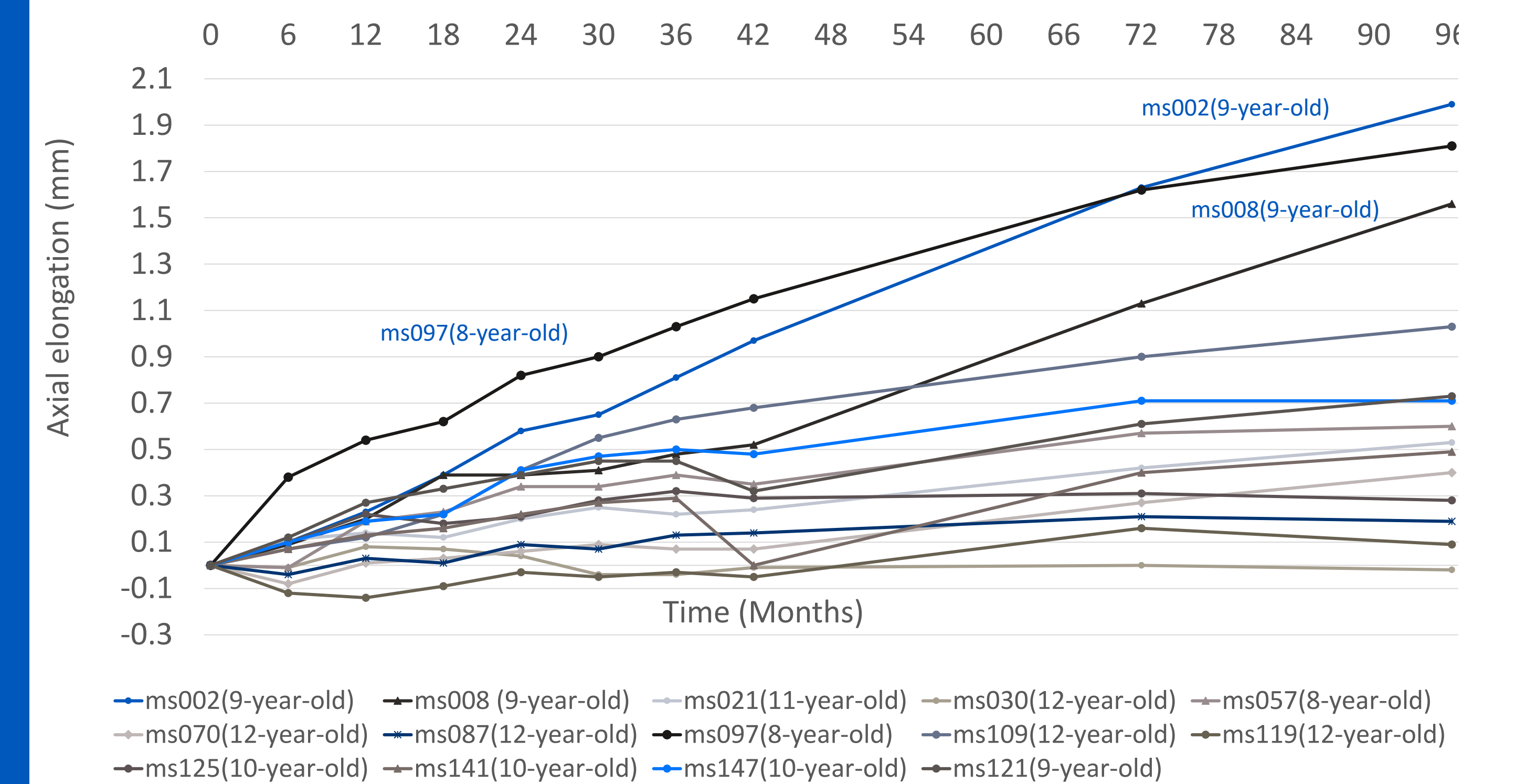


Figure 3. Individual axial elongation of Group 1 who wore DIMS over 8 years.

Conclusions

- 60% of participants who wore DIMS spectacles for six years continued using them for up to eight years.
- Those who stopped wearing DIMS spectacle lenses cited cost and lack of free lenses from the trial as a reason for stopping.
- All participants were satisfied with their DIMS spectacle lenses and felt their participation improved their awareness of managing myopia.
- Axial elongation was slower in children who continued wearing DIMS lenses compared to those who switched to SV lenses in the 7th and 8th years. DIMS lenses remained effective for those who wore them for the full 8 years.

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