

Letters to the Editor

Dear Drs. Pang and Maino,

Re: Pang Yi, Maino D, Zhang G, Lu F. Myopia: Can Its Progression Be Controlled? *Optom Vis Dev* 2006;37(2):75-79.

The most important modality for prevention, progression, and control was not mentioned - optometric vision therapy. A disconnect occurred between the editorial by Dominick Maino espousing the benefits of optometric vision therapy and the summary conclusions and recommendations by the authors of "Myopia."

Optometric vision therapy for myopia was first reported by Ward Ewalt in the Baltimore Myopia Control project 60 years ago, *Journal of American Optometric Association* 1946:17. This study of 111 subjects was a joint project with the Wilmer Eye Institute of Johns Hopkins University. The findings indicated 90% of the subjects improved visual acuity, 70% did not increase in refractive error, 20% remained the same, and only 10% increased during the half year of the program. I published a case report, "Stop Myopia Cold," in *JOVD* Vol. 34, Spring 2003, of the successful control of myopia typically found with optometric vision therapy and the judicious use of nearpoint lenses, that held over an eight-year period without a distance Rx. Our clinical approach is stated in the chapters "Myopia Control: Taming the Refractive Beast" and "Myopia Control Therapy," co-authored with Leonard Press in his text, *Applied Concepts in Vision Therapy*. It is diametrically opposed to the first recommendation in "Myopia: Can Its Progression be Controlled," which

states: Fully correct all myopia present. Behavioral optometry proposes that myopia is a positive adaptation to what Skeffington called the socially compelled biologically unacceptable sustained concentration at nearpoint.

The first signs of myopia include slightly reduced distance VA, typically worse monocular than binocular, a low degree of refractive error -0.75 or less, near point changes with less than 6[^] exophoria, low amplitudes of accommodation, low PRA, low divergence at near, poor accommodative facility and behavioral signs; writing and reading closer than Harmon distance, working in poor illumination, excessive computer use, video games, particularly hand-held.

"Correcting" this adaptation fully with minus lenses causes a decompensation and a re-adaptation occurs in order to achieve steady state performance at near tasks resulting in a further increase in myopia. Correcting the refractive error is counterproductive and needs to be reassessed.

Avestisov in a study of 1,956 school children at the Helmholtz Eye Disease Institute in Moscow, In: Myopia, Proceedings of the International Symposium Moscow USSR Dec. 1988, reported that accommodative training "helped to prevent or at least postpone the onset of myopia in an overwhelming majority of cases: After 25 years of observations, only 2.6% of high risk children who had taken accommodative training sessions presented with myopia, as against 31.% among those who had not."

All the current research studies Orinda, COMET, CLAMP, U.S. Pirenzipe Study Group will

continue to be unsuccessful and lack clinical relevance until they *include* an experimental treatment group utilizing optometric vision therapy. It behooves this organization to become involved in developing such a study. Until then, every patient in our examination chair is unique, a case study of one, and yes, we should use *all* of our available resources to fulfill their needs and improve their quality of life.

Sincerely,
Arnold Sherman, OD, FAAO,
FCOVD
Merrick, NY

Authors' Response

Dear Dr. Sherman,

We deeply appreciate your interest in our recently published article, "Myopia: Can Its Progression Be Controlled?" You raised an interesting point about the efficacy of optometric vision therapy on the prevention of myopia progression. However, the articles and case report you cited are usually not considered enough support to unequivocally state that optometric vision therapy decreases myopia progression. It should also be noted that the goal of our review was limited to reporting on the *current* research in this area and was not intended to be a comprehensive review of all published articles/case reports on this topic

The first paper you cited was "The Baltimore Myopia Control project" (published in 1946), which stated that vision therapy improved visual acuity in 111 myopic subjects aged from 9 to 32 years of age.¹ This study had several significant

methodological problems. These flaws are noted below:

- No control group was used
- The age range of subjects (9 to 32 years) was too broad.
- The myopia degree varied from -0.50 to -9.00.
- Visual acuity was the only parameter used to measure the myopia progression and refractive error was not evaluated in this study. (The improvement of visual acuity noted in this study could have been due to a learning effect or eye chart memorization.)
- The study used multiple methods to assess visual acuity. These included not only the Snellen letter chart, but also the Illiterate E, and Landolt C charts.

You also cited your case report "Stop Myopia Cold".² In this report, patient Chris E aged 7.5 years started with an objective refractive error of -0.25 D in the right eye and Plano in the left eye before vision therapy. The patient had worn a near prescription of +0.50 D and received vision therapy for 8 years. At the end of 8 years, the objective refractive error was -1.50 D in each eye.

We have some concerns about this case report. First, this subject had myopia progression from -0.25 D to -1.50 D in the right eye and Plano to -1.50 D in the left eye over an 8 year period, with an average change of about -0.20 D every year. Gwiazda reported an average yearly myopic change of -0.6 D for children age of 6-9 and -0.4 D for children age of 10 to 11.³ It does indeed seem then that the myopia progression for this patient was slower. However, it is not clear that the slower progression in this case was a result of the prescription of additional near add given or therapy conducted. Secondly, a cycloplegic refraction, which is the currently accepted methodology for assessing refractive error in any study of myopia progression, was not performed.^{4,5} Thirdly, it may not be appropriate to withhold (or under correct) a patient's myopic prescription, since it has been

suggested that under prescribing may actually lead to increased amounts of myopia.⁶ Finally, this case report did not list the techniques used in the 42 sessions of vision therapy, which should be considered essential information for any treatment regimen.

As noted previously our paper stated that the selected articles reviewed would be *current* clinical research. We did not choose case reports or other papers that did not fit this criterion. Considering that there are very few clinical research articles available about the efficacy of vision therapy on myopia progression, we deliberately chose not to include this topic in our review.

It is obvious from our discussion above that well-designed clinical studies are needed to assess the efficacy of optometric vision therapy on myopia prevention and progression before any significant conclusions can be made.

As Dr. Maino noted in his editorial, optometric vision therapy can indeed be used for efficacious treatment of many vision dysfunctions. Optometric vision therapy has been shown to be based on sound scientific principles; effective for various anomalies of the binocular vision system; appropriate for the treatment of amblyopia and that it can also improve ones quality of life.⁷ Even though we hope to see more future research on vision therapy for control of myopia, the current research in this area is limited.

Once again we wish to thank Dr. Sherman for taking the time to comment on our article. We would welcome any additional comments as well.

Sincerely,

Yi Pang, PhD, OD

Dominick M. Maino, OD, MEd

Illinois College of Optometry

Reference List

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3. Gwiazda J, Hyman L, Hussein M, Everett D, Norton TT, Kurtz D, et al. A randomized

clinical trial of progressive addition lenses versus single vision lenses on the progression of myopia in children. Invest Ophthalmol Vis Sci 2003 Apr;44(4):1492-500.

4. Gwiazda J, Hyman L, Hussein M, Everett D, Norton TT, Kurtz D, et al. A randomized clinical trial of progressive addition lenses versus single vision lenses on the progression of myopia in children. Invest Ophthalmol Vis Sci 2003 Apr;44(4):1492-500.
5. Siatkowski RM, Cotter S, Miller JM, Scher CA, Crockett RS, Novack GD. Safety and efficacy of 2% pirenzepine ophthalmic gel in children with myopia: a 1-year, multicenter, double-masked, placebo-controlled parallel study. Arch Ophthalmol 2004 Nov;122(11):1667-74.
6. Chung K, Mohidin N, O'Leary DJ. Undercorrection of myopia enhances rather than inhibits myopia progression. Vision Res 2002 Oct;42(22):2555-9.
7. Maino D. Stereo Sue(lutions)! Optom Vis Dev 2006; (37)2:49-50.