

Peli prisms for hemianopia: An interdisciplinary approach to maximize successful adaptation

Annie Deschênes, O.T., D.E.S.S., O&M specialist^{1,2},

Terry Gallant, O.D.^{1,2,3}, Walter Wittich, Ph.D., CLVT FAAO^{2,3}

¹ Centre intégré de santé et de services sociaux (CISSS) des Laurentides – Le Bouclier

² Centre for Interdisciplinary Research in Rehabilitation of Greater Montreal (CRIR)

³ School of Optometry, Université de Montréal

Introduction

Peli prisms consist of a new optic aid incorporated within the patient's glasses that increase the visual field on the hemianopic side while maintaining unobstructed central vision. When this new technology was introduced to patients, our optometrist specialized in low vision noted difficulties concerning the adaptation to the optic aid and sought the collaboration of an orientation and mobility (O&M) specialist. An interdisciplinary protocol was then developed to improve the patient's understanding of the optic aid and related strategies. The aim of this protocol is to maximize the patient's potential in order to improve confidence and security during mobility.

Objective

To quantify the impact of mobility training on patients wearing the Peli optic aid using an interdisciplinary protocol intervention.

Methodology

Interdisciplinary protocol:

- Assessment by optometrist to prescribe the adequate lenses and determine if patient is a good candidate for Peli prisms.
- Once the new glasses are received (3-4 weeks following the order), the optometrist installs temporary Peli prisms on the lenses. The O&M specialist and optometrist evaluate the patient (T1: questionnaire, test #1, and test #2).
- After 2 weeks of using the glasses with the Peli prisms, but without any O&M training, the O&M specialist and optometrist reassess the patient (T2: questionnaire, test #1, and test #2).
- During a two-week period, the patient receives 3-4 sessions of O&M training with the Peli prisms. The training consists of walking exercises in interior and exterior familiar environments (home, supermarket, drug store, etc.).
- After the two weeks of O&M training, the O&M specialist and optometrist reassess patient (T3: test #1, and test #2). Optometrist adjusts lenses if needed, confirms prescription of Peli prisms and proceeds to order permanent Peli prisms.
- Once glasses with permanent Peli prisms received, optometrist verifies the adequacy of lenses and prisms. O&M specialist and optometrist reassess patient (T4: test #1, and test #2). O&M specialist offers a few sessions of training to remind patient how to use the Peli prisms. The initial questionnaire is repeated.

Tests developed to compare the performance with and without prisms

Test #1: Static test

Detection of movement on hemianopic side while standing still: A dynamic target has to be detected while coming from a parallel or perpendicular perspective.



Test #2: Dynamic test

Gait pattern along a wall: Measuring the distance a patient can walk as close as possible to the wall on his hemianopic side without hitting the wall.



Results

Case study:

78 year-old female; homonymous right hemianopia secondary to CVA in 2001; no neglect; presence of language and cognitive difficulties. Peli prisms: 40^Δ Right eye inferior only.

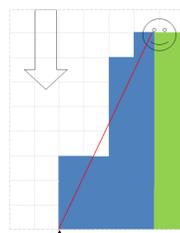
Static Test

Areas detected (viewed from above)

T1

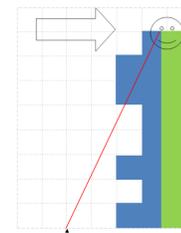
Initial trial

In parallel direction



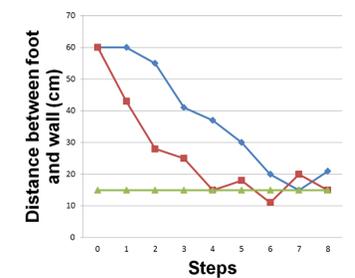
Potential visual field with prisms (25°)

In perpendicular direction



Potential visual field with prisms (25°)

Dynamic Test Walking along the wall

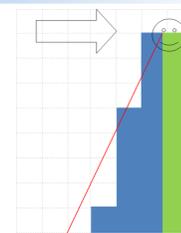


T2

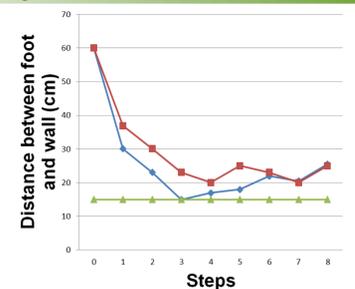
After 2-week trial without O&M training



Potential visual field with prisms (25°)

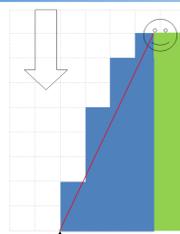


Potential visual field with prisms (25°)



T3

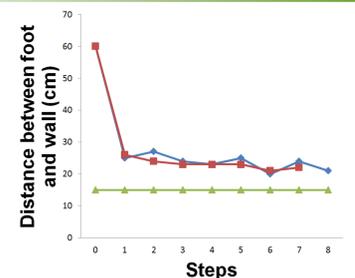
After O&M training



Potential visual field with prisms (25°)



Potential visual field with prisms (25°)



Detected areas by hemianopic subjects:

Visual field without prisms

Detected areas with prisms when object is moving

Areas without any object detection

Affected side without prisms

Affected side with prisms

Line of shoulder contact with wall

Conclusion

For this patient, the adaptation to Peli prisms seems to be more efficient with training:

- Distance reaction is more efficient after training both with parallel and perpendicular movements.
- Results show that the patient walks closer to the wall and maintains a straighter walk line.
- For this particular patient, the questionnaire was not completed at every step due to language and cognitive difficulties. At time of this presentation, the patient did not yet receive glasses with permanent Peli prisms.
- Therefore, T4 was not yet assessed.

Next step: A project is presently planned to improve measurement rigour and to recruit more patients; possibility multiple centers could be considered to share the protocol and reach a larger number of patients.

References