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VISUAL ACUITY IS NOT THE BOTTOM LINE: SOME TECHNIQUES OF VISUAL REHABILITATION

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Abstract

This paper details some of the specific methods which we have found to have positive visual results for clients with central vision loss (eccentric viewing training) or with nystagmus which is dampened or eliminated in a particular direction of gaze (null point training).

Key words: *Visual rehabilitation, eccentric viewing, null point, central field loss, nystagmus.*

"You are blind there is nothing more can be done for you". Many of my clients arrive to see me with this message still ringing in their ears. The reaction to this statement is varied. Many people are angry, this anger may subside to bitterness. Other people are very accepting and need to be actively encouraged to seek assistance. Often the initial anger becomes frustration as each task is more difficult and emphasises that which has been lost. Ultimately, many clients become determined to succeed and regain lost ground.

What are the realities of a sudden loss of vision? Independence is severely compromised. How do you check your accounts when you cannot read the bills? Relying on other people to read your personal mail is frustrating and an infringement of your privacy. Cooking a meal, doing the shopping, commuting to work, that is if you still have a job, become cumbersome if not impossible tasks.

An orthoptist can make a large difference to the quality of life of people in the above situations. By offering the positive suggestion that something can be done, setting short-term attainable goals gives the client support and a future to aim at. Not all visually impaired clients have a sudden onset of visual loss, many have a congenital problem.

The reactions vary considerably between clients, however, the response to achieving a better functional use of vision is generally the same, very positive.

This paper details some of the specific methods which we have found to have positive visual results for clients with central vision loss, (eccentric viewing training) or with nystagmus which is dampened or eliminated in a particular direction of gaze (null point training). Orthoptists can play an important role in assisting visually impaired clients to improve their quality of life; it is essential that some of us look to taking up this challenge.

ECCENTRIC VIEWING TRAINING

A current ophthalmologist's report is necessary; this should indicate the diagnosis and stability of the condition. If the ocular condition is stable, eccentric viewing training may commence. Visual

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acuity, both near and distance, should be tested as should the field of vision with particular emphasis on the central field.

The area of retina to be used for eccentric viewing can be ascertained from the field. The closer this point is to foveal vision the better the prognosis. Having decided on the most viable area(s) of retina, this can be confirmed both subjectively and objectively.

(a) Subjectively: Instruct the client to look directly at a selected area of an object. A large print playing card is suitable using the number and suit in the top corner. When looking directly at the number it should not be visible, the client then moves their eyes into the selected position of gaze stopping as soon as the number and suit become visible, e.g. moving the eyes into dextroversion will stimulate temporal retina in the right eye and nasal retina in the left.

(b) Objectively: Instruct the client to look straight ahead. Place a prism of selected strength before one eye whilst instructing the client not to move his or her eye. By manipulating the base direction and the strength of the prism the degree and direction of eye turn can be established. For example, a 10^{Δ} base out prism before the right eye will shift the image 5° temporal to the fovea. The objective method has the advantage of giving the client a preview of the clarity of vision they may hope to attain. This is good incentive for the tedious hours of training ahead.

Not all clients can see successfully with the prism and many clients, particularly the elderly, have trouble with fine control of eye movements when using the subjective method.

There may be a difference in field between eyes with a resultant difference in potential vision. Unless there are contra-indications the best eccentric point in the eye with the least field loss is preferred. The need to use good lighting properly placed is an important factor in training. The client should be allowed to choose their preferred lighting from a range of incandescent and fluorescent types, allowing changes in intensity and light colour.

Having established the area to be used for eccentric viewing commence training using large print materials, e.g. N36 or N24. The emphasis at this stage should be on the technique. A stimulus object which is relatively easy to see allows concentration on technique and the satisfaction of achievement.

Constant feedback is essential, many clients are uncertain as to the accuracy of their vision: this time can be used to promote confidence in the client. As each task becomes easier, reduce the print size. Single words are preferable until N16, then paragraph material becomes useable.

The client should be encouraged to find the eccentric viewing point on the first word or few letters of that word on each line. When the clearest vision is obtained the eyes are kept in this position and the reading material moved (from right to left), to maintain the one eccentric viewing area.

A line guide may be required not just to maintain the place on the page but to reduce the amount of visual input. Clients with visual pathology seem to suffer a problem similar to the crowding phenomenon. The use of a line guide covering both the lines above and below, and a card to cover the letters to the right of those being read can reduce this problem.

Ocular dominance can be another problem, particularly if vision has been unequal in the past, and what has been the good eye is now more severely affected. Initially doing training covering the dominant eye forces the use of the now better eye. Once clients become aware of the quality of vision available in the non-dominant eye the patch can be discontinued.

The level of training can be varied depending on the client's needs. A younger client who may want to enter the workforce (or remain there) or undertake tertiary study will need a more demanding programme. For these clients the most efficient use of residual vision is necessary. Even if normal print size cannot be attained reducing the amount of magnification required allows a greater field of vision, therefore increasing reading efficiency. Elderly clients

TABLE 1
Eccentric Viewing

Client	Age	Near Visual Acuity		Ocular Complaint
		Before	After	
Male	15	N48	N18	Leber's O/A
Male	21	N80	N12	Leber's O/A
Male	23	N6	N6	Stargaardts
Female	24	N36	N10	Stargaardts
Male	30	N48	N24	Optic atrophy?
Male	30	N24	N16 (N12)	Optic atrophy
Male	33	N32	N24	Stargaardts
Male	33	N48	N24	Leber's O/A
Male	35	N36	N16	Optic atrophy
Female	48	N18	N12	Junius-Kuhnt
Male	52	N12	N8	Pseudoxanthoma elasticum
Male	65	N48	N24	Retinal haemorrhage
Male	66	N80	N24	Angoid streaks
Male	67	N48	N5	Senile macular degeneration
Female	70	N24	N16	Senile macular degeneration
Male	79	N64	N24	Senile macular degeneration

generally require a less rigorous training programme as their needs often relate to larger objects, e.g., relatives' faces, utensils on the kitchen table, etc.

At present the above programme is run on the basis of two one-hour sessions per week for a minimum of eight weeks. However, sessions rarely extend for the full hour as training is very tiring, generally 35-40 minutes is sufficient.

NULL POINT TRAINING

Before commencing null point training the orthoptist should have the results of the client's current ophthalmological report. Lighting requirements should be assessed. Even lighting on the page is important in these cases as a change of lighting can result in a loss of control of the nystagmus. Null point can be ascertained by a careful study of ocular movements. The nystagmus may not completely null so select the position of gaze where movement is least or controlled.

The position of gaze should also be as practical as possible, e.g., if nystagmus nulls both in dextroelevation and dextroversion, then dextroversion will be the more useful position.

Use a flexible reading board, e.g. typing copy holder, to place the written material into the specified position of gaze. The client sits comfortably in the primary position moving only the eyes to take up fixation. This places the client's eyes at null point. To read the material the client should move the head across the reading material, therefore maintaining the eyes at null point. The orthoptist is required to monitor the eyes at null point, stopping the client whenever movement commences. Immediate feedback as to the accuracy of the reading is highly desirable.

Initial training can begin on columns of words, followed by paragraph material when this becomes appropriate. Null point training is generally quicker than eccentric viewing, the technique is easier to establish.

Tables 1 and 2 summarise some of the findings of clients undertaking eccentric viewing and null point training. Results so far indicate eccentric viewing is not only decreasing the print size the client is able to read but providing a more efficient use of vision for work, study and socially. Null point training is perhaps of greatest value in a reading situation, thus being helpful at work or during tertiary study.

The visual rehabilitation programmes to date have successfully improved functional vision which can be applied to many situations. This work is therefore very necessary to the visually impaired community and a very satisfying use of orthoptic training.

TABLE 2
Null Point

Client	Age	Visual Acuity	
		Before	After
Male	18	N15	N10
Male	18	N80	N48
Male	25	N12	N10
Female	35	N12	N8