

# Low Vision Rehabilitation: An Update

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## Abstract

The human and financial costs associated with sight loss can be reduced by appropriate low vision rehabilitation strategies. Low vision rehabilitation is an increasing area of work for the orthoptist in Australia. The aim of this project is to establish the range of rehabilitation services being provided by orthoptists in low vision centres in Australia and in particular the rehabilitation technique of eccentric viewing. Information is also sought internationally in relation to the role of the orthoptist in low vision. Data are collected by survey and analysed for trends for comparison with previous studies. Orthoptists working at low vision centres are surveyed to gather information.

### Key words:

Sight loss, vision impairment, orthoptist, eccentric viewing.

Sight is a valuable sensory mechanism informing us of the world around us. Australian Bureau of Statistics figures indicate 9% of the Australian population have sight loss and that the incidence of sight loss increases with age.<sup>1</sup> Loss of sight can severely compromise daily functions and reduce independence. A brief review of the literature reveals the extent and nature of this impact. A number of

researchers report loss of ability to perform certain household tasks such as shopping, cooking and housekeeping to be associated with sight loss.<sup>2-4</sup> An American study reports older persons with vision impairment are 1.37 times more likely to experience difficulties with activities of daily living.<sup>5</sup> The impact on mobility is reflected in reported difficulty with public transport and walking.<sup>6,7</sup> Loss of mobility also contributes to feelings of isolation which is a commonly reported psychosocial impact of sight loss.<sup>2-4,8-10</sup> In addition, vision impaired individuals are reported to have a higher incidence of falls and are more likely to be injured as a result of falls.<sup>11</sup>

Sight loss also impacts on a person's feelings of well being. Vision impaired participants in Keefe's focus group based study report difficulties in consumer and social interaction due to an inability to recognise faces. Participants in the focus groups also reported difficulties with personal tasks such as self administering medicines, and embarrassment with eating skills when eating in public.<sup>4</sup> A personal difficulty which is often not considered is the loss of confidentiality associated with loss of reading ability and consequent reliance on other people to read personal documents.<sup>4</sup>

The impact of vision loss on the individual has been the subject of a number of studies however the impact on society generally is less well documented. Further study needs to be done on the impact of sight loss on the use of community services such as "meals on wheels" and home help. One German study reports the increasing costs of welfare payments due to vision impairment and the need for rehabilitation to reduce this cost.<sup>12</sup> Vision impairment amongst nursing home residents increases the dependent needs of these residents with a consequent increase in workload and stress on nursing home staff.<sup>13</sup>

As Krumpaszky and co workers suggest, the impact of sight loss on the individual and subsequently the community can be reduced with effective rehabilitation. Age-related macular degeneration (AMD) is a major cause of legal blindness in the aged.<sup>14-16</sup> This eye disease is associated with severe vision loss as a result of damage to the foveal region of the retina.

Consequently AMD has the potential to severely compromise the ability to perform many daily tasks such as reading, driving and ability to recognise faces.<sup>17</sup> These functional losses will result in a loss of independence. The impact on function associated with sight loss caused by AMD can be ameliorated by a technique of vision rehabilitation known as eccentric viewing.<sup>18-21</sup> Other common causes of sight loss include cataract, diabetic retinopathy and glaucoma.<sup>16</sup> The functional impairments associated with these causes of sight loss may be reduced by the appropriate use of optical aids.<sup>22, 23</sup> Appropriate lighting and use of colour contrasts also provide simple but effective means of rehabilitation.<sup>24, 25</sup> A range of professionals including occupational therapists, low vision therapists and teachers have provided aspects of vision rehabilitation. However orthoptists have the most appropriate background in anatomy and physiology of the visual system, ocular pathology and the basic therapy skills to best provide vision rehabilitation. Orthoptists in Australia have broadened their field of practice to include low vision rehabilitation and more recently orthoptists in Europe and the UK have followed this trend. The aim of this paper is to present an overview of orthoptic involvement in visual rehabilitation both nationally and internationally and to consider some of the characteristics of low vision rehabilitation in Australia.

## Method

Data was collected by questionnaire. One questionnaire was presented to representatives of member countries attending the 1998 International Orthoptic Association Council. This questionnaire consisted of four questions:

1. Do orthoptists work in low vision rehabilitation in your country?  
If the response to this question was yes then the following questions were asked:
2. Do orthoptists receive additional training to provide vision rehabilitation?
3. Does the orthoptist work with optical aids and / or provide rehabilitation therapy?
4. Is vision rehabilitation a developing field for orthoptists in your country?

A second questionnaire was sent to the orthoptist(s) in the major low vision agencies across Australia. There were six agencies for the blind with questionnaires sent to capital city bases in Adelaide, Brisbane, Melbourne (two agencies), Perth and Sydney and four regional branches in Victoria and two in NSW. In addition one questionnaire was sent to a Melbourne private practice which provides vision rehabilitation.

## Results

### 1. Results from the international survey (n = 10)

Orthoptists are working in low vision in the following countries: Austria, Belgium, France, Japan, Netherlands, Portugal, Sweden and UK. They are not doing this work in South Africa and Switzerland.

From the representatives of the eight countries where orthoptists work in low vision the following information was also gained:

Non compulsory additional training is provided in Austria, France, Portugal and Sweden

All countries indicated that the orthoptists role includes optical aids and low vision training strategies

Low vision rehabilitation is a growing field in all of these countries.

A comment of interest was reported from Belgium where legislation requires an agency to employ orthoptists to be recognised as a low vision agency and orthoptists are the only professional group permitted to provide low vision services.

### 2. Results from the Australian survey. There was an 85% return rate (11 of 13 questionnaires).

#### Demographic data

Age range of the clients seen by respondents was from 60 to 90 years with the exception of one respondent who saw children, age range 5 to 8 years. The measured distance acuities of clients ranged between 6/18 to 6/240 and in addition one respondent reported clients with sight reduced to hand movements. The range of near acuities reported was from N6 to N96.

Respondents were asked to indicate the type of service provided and the frequency of providing those services. These responses are recorded in Table 1.

Respondents were asked to indicate the frequency with which they provided specific vision rehabilitation training services these responses are recorded in Figure 1.

Respondents who provided eccentric viewing training were asked to indicate the materials used to provide training, the length of time spent in training and the outcome in terms of a near acuity measure. Table 2 indicates the type of training materials used and the number of respondents who used each.

In addition individual respondents reported using the Visual Rehabilitation Resource Books (Fitzmaurice 1993) the Eccentric Viewing Home Kit (Fitzmaurice 1994), school work and "cross" exercises.

Table 3 indicates the number of training sessions provided and the outcome in terms of near acuity.

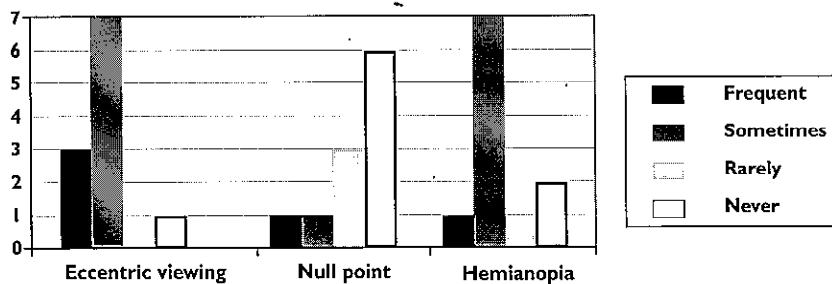
Some respondents indicated the pre and post training near acuities for each of their clients. This information is presented in Figure 2.

Another potential outcome measure of rehabilitation training is the clients' perceived functional improvement. Respondents were asked to record client comments as to functional improvements in their visual function post training and these comments are recorded in Table 4.

Task	1	2	3	4
Optical Aids	10	0	0	1
Lighting	10	0	0	1
Training	4	5	1	1
ADL	6	3	1	1
Mobility	2	1	1	7
Education	8	3	0	0
Counselling	6	1	1	3
Visual Fields	4	1	n/a	n/a
Sports Category	0	2	n/a	n/a
CCTV	2	n/a	n/a	n/a
Reading Stands	1	n/a	n/a	n/a
Reading Aids	1	n/a	n/a	n/a
Glare Control	1	n/a	n/a	n/a
WorkPlace Consultancy	n/a	1	n/a	n/a
Work with Children	1	n/a	n/a	n/a

1 = Frequent (weekly)  
 2 = Sometimes (monthly)  
 3 = Rarely (occasionally over a year)  
 4 = Never

**Table 1.**  
 Services Provided by Respondents and Frequency of Delivery (n=11).



**Figure 1.**  
 Frequency of Providing Vision Rehabilitation Training Services (n=11).

Group	Number of Respondents
Large objects	7
Reading Tasks	7
Cards	6
Computer	2

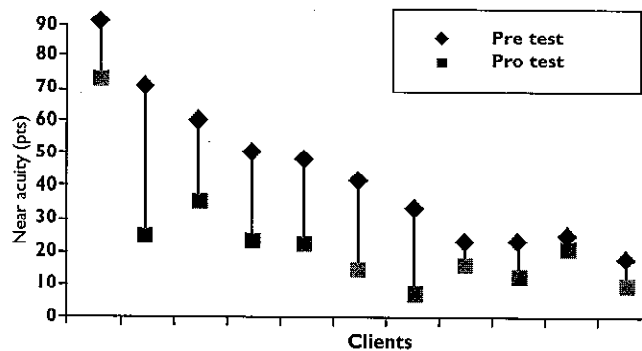
**Table 2.**  
 Techniques used to train eccentric viewing (n=7).

**Note:** Where respondents indicated the reduction in print size by giving the maximum and minimum point sizes I have calculated improvement at 2 point intervals. If respondents indicated an actual number of points as the reduction of print size this figure is used.

**Table 3.**  
Summary data relating to training sessions.

Number of training sessions	Outcome in nearactivity improvement
3 - 7	4 points (N18 - 10)
2 - 4	1 point
1 - 2	12 points (N40 - 16)
2 - 6 months	2 points
1 - 2	1 - 2 points
1 - 26	Improvement indicated but not quantified
4 - 6	Mean increase 10 points
6 weeks to 6 months	8 to 10 points

**Figure 2.**  
Reported Near Acuties Pre and Post Eccentric Viewing Training.



**Table 4.**  
Reported Functional Outcomes of Eccentric Viewing Training (n=7).

Improved Function	Number of Respondents
Seeing Faces	6
Reading	5
Watching TV	5
Bowls (lawn or carpet)	3
Assisted in social activity	1

### Discussion and Conclusion

Orthoptists working with agencies for low vision across Australia provided a range of services. The most commonly provided services were optical aids (two respondents specified they provided advice/training only, not prescription); lighting, education, activities of daily living and counselling (Table 1). It is interesting to compare these results to those obtained in an unpublished survey conducted by Fitzmaurice and Wulff in 1992 and reported at the OAA Conference of that year (titled: Survey of Orthoptists working in Low Vision within Australia). Whilst the 1992 survey was sent to a

larger number of orthoptists it was possible to identify the data from the same major agencies surveyed in the current study. The 1992 data was similar to this study in that optical aids, lighting, activities of daily function (ADL) and education were the most commonly performed tasks. However in the 1992 study orthoptists commonly provided assistance with reading and 50% of respondents provided assistance with writing. These activities were not commonly reported in this study. Provision of eccentric viewing training remains at a similar level from 1992 to 1998, provision of null point training had decreased (5 in 1992 to 2 in 1998) and

provision of hemianopia training had marginally increased from 7 to 8 respondents.

To provide the above mentioned services effectively a practitioner would gain benefit from a thorough knowledge of the anatomy and physiology of the visual system. Services associated with optical aids and lighting would be enhanced by a thorough knowledge of optics and an understanding of the properties of light. Provision of rehabilitation therapy, education and counselling would all be enhanced by a knowledge of psychology and sociology. All of these studies are incorporated into the orthoptic training programs in Australia. Thus the trend of Australian orthoptists to move into the low vision industry is well supported by their academic training.

Nine of the eleven respondents were actively involved in providing eccentric viewing training. Two respondents indicated they discussed eccentric viewing with their clients but did not have time to provide training. Eight of the respondents indicated they were involved in training clients with hemianopia (Figure 1). Respondents were further questioned about the eccentric viewing services provided and the client outcomes (Tables 2 - 4 and Figure 2). The commonly used training methods involved print materials of varied size and form (Table 2). Training programs varied in length from 1 or 2 sessions to 6 months. In all cases clients demonstrated a decrease in the print size able to be read post training (Table 3 and Figure 2). In this small sample training method and duration do not appear to influence measured outcome. The only objective outcome measure is pre and post training print size. Whilst the number of clients reported in this study is too small to indicate statistical significance of improved print size, these results show a similar trend to those reported in a larger sample by Fitzmaurice.<sup>26</sup> In this study of 86 clients post training near acuity was found to be significantly better than pre training near acuity ( $t = 8.243$   $p = 0.0001$ ). It is interesting to note that the trend to improved near acuity post eccentric viewing training can be demonstrated by a number of orthoptists providing varied training programs.

A subjective outcome measure is the clients' perceived change in visual function. The responses in this survey support previously reported data that eccentric viewing is an appropriate strategy to ameliorate the disability associated with loss of macula vision.<sup>18, 19, 21, 26</sup> Previous studies indicate some of the functional deficits associated with centre field loss include inability to see faces, difficulty with reading,<sup>4, 17</sup> difficulty with daily tasks<sup>2, 5, 8, 9</sup> and social isolation.<sup>2, 4, 10</sup> The functional improvements reported by clients of survey respondents included seeing faces<sup>6</sup>, reading<sup>5</sup> and a range of social activities<sup>9</sup> (Table 4).

The data from this study provides a useful record of the role of the orthoptist in low vision in Australia and the emerging role internationally. The survey provides clinical evidence of the benefits of

eccentric viewing as a strategy to ameliorate some of the functional losses associated with sight loss. The literature reflects a growing body of evidence that sight loss is debilitating to the individual and often results in a loss of independence. Loss of independence creates a cost to the individual and in the wider view the community generally through increased demand on community services and nursing home places. It would appear the orthoptist can provide services which will help to ameliorate the impact of sight loss on the individual and it is reasonable to extrapolate that increasing an individual's functional abilities will also result in savings for the community generally. The type of services being provided are closely associated with the areas of study undertaken by undergraduate orthoptists thus suggesting orthoptists are appropriate professionals to provide low vision services. Whilst the data from this study is only indicative of certain trends it suggests more rigorous comparative studies are required to establish the value of low vision rehabilitation in terms of outcome measures and cost benefits. Further, the suitability of the orthoptist to provide these services should be firmly established.

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