**Association for Education and Rehabilitation of the Blind**

**and Visually Impaired (AER) Position Paper:**

# Use of Visual Occlusion in Orientation and Mobility Instruction

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From the 1940s to the 1960s, orientation and mobility (O&M) specialists used blindfolds to teach nonvisual skills. For example, Miyagawa (1999) discussed the use of sequential learning and sleepshades in the Veterans Administration (VA) for new orientors who received O&M training in the 1940s. In fact, for many years persons with low vision receiving O&M instruction were taught as if they had no vision (Apple, M. et al., 1987). With the advent of low vision research, the importance of visual efficiency training and the use of optical aids for O&M was adopted by the O&M profession (Apple, M., et al., 1987). Consequently, individuals with low vision were taught to integrate visual and nonvisual skills to travel efficiently (Bozeman, 1998; Wiener & Sauerburger, 2003).

 In the 1960s, Dodds (2008) discussed use of visual occlusion as a component of the structured discovery learning philosophy after his visit to Nebraska. Sleepshades were and continue to be used by O&M instructors, especially those who have National Orientation and Mobility Certification (NOMC). One of the reasons for their use is to block out the remaining vision of a person with a visual impairment as it can interfere with learning (Maurer, et al., 2006). This paper provides information about how various forms of occlusion may be used in O&M instruction for certain learners.

 Programs providing instruction in independent travel to individuals with functional/usable vision are most effective when they recognize the importance of using both visual and nonvisual techniques to travel safely and efficiently. Although multiple references about low vision mobility exist, as early as 1982 Marron and Bailey (1982) recognized the fact that “any residual vision, even if it is only light perception, enhances orientation-mobility skills” (p. 413). In 1989, this belief continued with Dodds and Davis (1989) reporting a new tool, the Percentage of Preferred Walking Speed, for evaluating the progress of individuals with low vision. Previous literature indicated that people travel differently depending upon the amount and type of vision they possess (Beggs, 1991; Bozeman, 1998; Clark-Carter et al., 1986; Dodds et al., 1983; Geruschat & Smith, 2010; Geruschat et al., 1998; Haymes et al., 1994, 1996; Jacobson, 2013; Kuyk et al., 1996; Long & Giudice, 2010; Long et al., 1990; Lovie-Kitchin et al., 1990; Massof, et al., 1990; Morrissett et al., 1983; Salisbury, 2017; Silverman, 2015; Smith et al., 1992).

 Geruschat and Smith (2010), discussed the use of the blindfold as a training method and argued for a balanced approach. They stated, “The majority, if not all, of the training should emphasize the evaluation and use of existing vision and skills for determining when vision is or is not reliable for mobility judgments” (p. 81). They also stated that “it is important not to view blindfolding as an all or nothing prospect” (p.81). With the permission of the student, the authors recommend the judicious use of blindfolding as one strategy to interweave training into the combined use of vision and other sensory skills.

 Salisbury (2017) published about the benefit of full occlusion to the adjustment to blindness process. He noted the method of using occlusion for a sufficient length of time for the cane skills to become second nature before reintroducing use of the remaining vision.

 As noted by Silverman (2015), for some individuals, visual occlusion may be an effective method for teaching reliance on the use of other senses, trusting the use of the long cane and guide dog, building confidence in handling all mobility situations, and preparing for travel in varying lighting conditions. Further, Geruschat and Smith (2010), wrote that best practice for individuals with low vision incorporates instruction in the use of remaining vision so that they will learn to use both visual and nonvisual information simultaneously. While the use of visual occlusion can be an appropriate instructional technique for many individuals, it must not be mandated as a condition for the receipt of instruction. The Rehabilitation Act through its various reauthorizations introduced the concept of consumer choice as a key ingredient in service provision (Congress.gov, 1992). Therefore, when occlusion or partial occlusion is to be used, it should be provided with the prior expressed consent of the individual receiving instruction. The O&M specialist, in consultation with the individual with low vision and, when appropriate, their family, should determine whether and how to make use of visual occlusion (Franck & Sutton, 2000).

The Challenges of Travel for Individuals with Low Vision

 People with low vision often have travel challenges: difficulty detecting changes in elevation, managing light (direct and indirect), crossing streets, “reducing unwanted contact with obstacles” (Geruschat & Smith, 2010, p.70). To remediate these challenges, Wiener and Sauerburger (2003) suggest that persons with low vision learn the following:

1. nonvisual techniques and how to trust the nonvisual information
2. how to use vision reliably and efficiently, while
3. not allowing vision to distract from effective nonvisual information
4. how to use nonvisual and visual information together (Wiener & Sauerburger, 2003)

 Individuals with low vision benefit from learning to perceive and utilize information received by all of their senses, including their vision, to travel safely and effectively. Merrill, (2018) studied the effect of occlusion during dance therapy. The results indicated that the occluded group performed better in the areas of confidence, orientation and posture.

 For efficient travel, individuals with low vision can perceive and utilize both visual and nonvisual information simultaneously. Many individuals with low vision are unable to use visual and nonvisual information together unless they receive instruction in how to integrate the use of both types of information as they travel. Therefore, it is necessary to provide visual training as well as nonvisual strategies for travel (Franck & Sutton, 2000; Geruschat & Smith, 2010).

 Visual occlusion is one of several strategies available to teach individuals with functional vision to perceive and utilize nonvisual information. For individuals with low vision, the use of visual occlusion may be an option for providing this aspect of instruction (Wiener & Sauerburger, 2003). Types of occlusion for children with low vision (Kish & Hook, 2016) include diffuse occlusion (sunglasses where tape is placed in a crisscross pattern), a world of color where colored tape is used on sunglasses to block detail vision, and the use of darkened locations (e.g., gymnasium).

The Use of Visual Occlusion

 For some individuals the use of visual occlusion will serve as a helpful means of learning nonvisual techniques because occlusion prevents visual distractions and thus heightens awareness of the nonvisual information that is present (Wiener & Sauerburger, 2003).The integration of nonvisual and visual skills provides individuals with more choices (Sticken & Kapperman, 2010). With the vision occluded or partially occluded, the individual can concentrate on other sensory information. With experience, the traveler learns to use the remaining sensory information and to trust the information gained through the senses of audition, touch, proprioception, kinesthetic, olfactory, and the vestibular sense. For example, Kish and Hook (2016) discuss the use of occlusion for children with low vision “for nonvisual perceptual skills to take hold and grow” (p. 335).

 When using visual occlusion for training, individuals are prevented from being distracted by vision; however, when vision is no longer occluded, many people revert to their old habits and let the vision interfere with their ability to notice and use the nonvisual information (Kappan, 1994). Thus, no visual occlusion program is complete unless the individual learns to notice and use the nonvisual information when the vision is no longer occluded (Wiener & Sauerburger, 2003).

 If visual occlusion is considered for use with individuals who are deaf or have a hearing impairment, it must be provided without compromising communication with the O&M specialist. Instructional communication must be in the mode that is most effective to facilitate learning and put the individual and O&M specialist at ease during the instruction through a combination of visual (e.g., speech reading), tactile (e.g., American Sign Language), and auditory modes (e.g., talking) (Bourquin, 1996; Lolli et al., 2010; Sauerburger, 1993).

**The Integration of Visual and Nonvisual Techniques**

 Most often the issue is not simply whether to use or not to use visual occlusion. Rather, the issue is how to provide instruction in the use of visual and nonvisual information so that both can be used simultaneously. Such integration of visual and nonvisual information can be taught by using intermittent and/or partial occlusion (Franck & Sutton, 2000).

 With intermittent occlusion, the individual may perform a task visually, and then repeat the task while the vision is occluded (Wiener & Sauerburger, 2003). The order of presentation may be varied but the intent is to allow the individual to compare the information available both with and without vision. This helps the individual understand the uses and limitations of vision. It prepares the person for use of vision and nonvisual information in real life situations (Wiener & Sauerburger, 2003).

 Intermittent and partial occlusion can be used when training a person with low vision, especially central field loss, to use a guide dog to move from visual inefficiency to tactile efficiency. Individuals are supported through a four-stage process to use their vision for recreation and orientation while their guide dog handles the mobility role. For example, initially a student is asked to find a curb while using the guide dog as a mobility tool. The instructors may notice behaviors (e.g., student goes ahead of the dog to find the curb) that impede the tactile information the dog is giving to the handler. Partial occlusion is then used to complete the same activity and the instructor provides feedback about the handler’s progress locating the curb. This process continues until the handler is using the tactile information provided by the dog to travel efficiently (Franck & Sutton, 2000).

 With partial occlusion, the bottom half of the individual’s vision is covered so that he or she cannot see what is on the ground in front of the next step (Wiener & Sauerburger, 2003). The individual must rely completely on the nonvisual information that the cane provides while, at the same time, looking ahead to gain clues about the surroundings (Wiener & Sauerburger, 2003). Partial occlusion has been shown to be effective in enabling people to be aware of and use their cane information while they notice and use visual information (Lauren, 1988).

When to Introduce Visual Occlusion

 A final concern when considering the use of visual occlusion is the adjustment of the individual to his or her vision loss. O&M specialists must be cognizant of the fact that although clinically the visual occlusion method may be beneficial to specific individuals, it is vitally important to take into consideration the emotional acceptance of the individual for this teaching strategy prior to its use.

 According to Livneh’s Model of Adaptation to Disability (Livneh, 1986), there are five phases of adjustment. During initial impact and defense mobilization phases, the individual resists awareness of the disability. In the next three phases, initial realization, retaliation, and reintegration, the individual moves from realizing the disability to fully accepting the disability. The cognitive defenses and emotional components are distinctly different in each of the phases. Similarly, Tuttle and Tuttle (2004) identify seven phases of adjustment to blindness: (1) Trauma, Physical or Social, (2) Shock and Denial, (3) Mourning and Withdrawal, (4) Succumbing and Depression, (5) Reassessment and Reaffirmation, (6) Coping and Mobilization, and (7) Self-Acceptance and Self-Esteem. The provision of successful O&M lessons using occlusion during Phase 6 may have a positive impact on the student’s independent travel, thus improving their self-efficacy.

 Introduction of visual occlusion before the individual is ready to accept the challenges of the disability can result in rejection of training or even return to an earlier phase of adjustment. For example, Sauerburger and Bourquin (2010) recommend introducing the use of partial occlusion using Walker et al. (2003) model of learning and its relationship to O&M instruction using occlusion. The occlusion strategy should be introduced during Stage 3 when students have mastered their cane techniques and can use the cane safely during distractible moments (e.g., use of occlusion). If occlusion is introduced during Stage 1 (student learns how to use a cane) or Stage 2 (student knows how to use their cane with concentration), then individuals with low vision may not trust the information provided by their canes. To move to Stage 4 (student can use nonvisual skills while detecting hazards) students must be motivated to learn the nonvisual skills, however if a person is not motivated, then the nonvisual skills will not assist them with their travel (Sauerburger & Bourquin, 2010). If the student does not have a positive experience with occlusion, then this can impact their self-efficacy, possibly hindering their future travel skills. In fact, Kish and Hook (2016) advocate the importance of offering occlusion to children with congenital low vision.

 The goal is for persons with low vision to integrate visual and nonvisual skills into their everyday life so they can travel independently, safely, and efficiently. Sauerburger and Bourquin (2010) discuss the need for individuals with compromised vision to be motivated to use nonvisual skills for daily life. Likewise, Geruschat and Smith (2010) stress the importance for persons with low vision to learn how to use a cane (e.g., nonvisual skills) for safety in situations when they cannot rely upon their vision. Therefore, O&M specialists need to assess the individual’s adjustment to this visual impairment to determine when occlusion is appropriate.

Who Should Determine the Use of Occlusion?

 Together with the individual, and where appropriate with the individual’s family, the O&M specialist is the professional designated to determine when instruction in the use of available vision, occlusion of available vision (Sauerburger & Bourquin, 2010), or a combination thereof, are effective strategies in the provision of O&M instruction. As with any intervention technique used in education and therapy, the direct service provider is in the best position to consult with the individual regarding potential service approaches and understand the individual’s needs. In teaching O&M strategies, the O&M specialist is uniquely prepared to evaluate the individual’s use of functional vision and work with the person to design an instructional program that is appropriate for that individual’s needs (Geruschat & Smith, 2010; Griffin-Shirley & Pogrund, 2018; Jacobson, 2013; Congress.gov, 1992).

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