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Strategic interventions in visual rehabilitation: from early stimulation to promoting functional autonomy

Intervenções estratégicas em reabilitação visual: da estimulação precoce à promoção da autonomia funcional

Maria de Fátima Neri Góes[1,2], Wilma Lelis Barboza[3], Fernanda Belga Ottoni Porto[4]

1. Instituto de Cegos da Bahia, Salvador, BA, Brazil.
2. Hospital Santa Izabel, Santa Casa de Misericórdia da Bahia, Salvador, BA, Brazil.
3. Presidente do Conselho Brasileiro de Oftalmologia 2024-2025.
4. Editora Chefe, eOftalmo.

According to the World Health Organization, visual impairment is one of the main global public health challenges, affecting approximately 2.2 billion individuals worldwide[1]. This scenario has intensified due to population aging, the increasing prevalence of chronic noncommunicable diseases, and technological advances in neonatology, which have significantly increased the survival of extremely premature newborns. As a result, there has been a consistent increase in the prevalence of alterations in visual development, including impairments of cortical origin. In this epidemiological context, visual habilitation and rehabilitation play a central role in the organization of ophthalmologic care.

The World Report on Disability defines rehabilitation as the set of measures designed to assist individuals with disabilities, or those likely to experience disability, in achieving and maintaining optimal functioning in interaction with their environments[2]. This definition reinforces the biopsychosocial perspective by shifting the focus from structural impairment alone to functional performance, social participation, and interactions with environmental factors.

In the field of low vision, Eleanor E. Faye established an important conceptual framework by defining this condition as permanent visual impairment that cannot be completely corrected by conventional medical, surgical, or refractive means but that can be improved through the systematic use of optical aids and visual rehabilitation strategies[3]. By emphasizing remaining visual potential, Faye redirected clinical practice toward maximizing functional performance rather than focusing solely on measurements of visual acuity.

The increase in life expectancy and the higher prevalence of chronic diseases have led to a significant increase in the number of individuals with visual limitations due to age-related macular degeneration, glaucoma, diabetic retinopathy, and other chronic conditions. International evidence indicates that the lack of structured rehabilitation services not only perpetuates health inequalities but also jeopardizes educational, occupational, and social trajectories throughout

Corresponding author: Maria de Fátima Neri Góes. E-mail: fatimabneri@gmail.com
Received on: 25 de Fevereiro de 2026. **Accepted on:** 6 de Março de 2026.
Funding: The authors declare no funding. **Conflicts of interest:** The authors declare no conflicts of interest.

How to cite: Góes MF. Strategic interventions in visual rehabilitation: from early stimulation to promoting functional autonomy. eOftalmo. 2025;11(4):132-4.

DOI: 10.17545/eOftalmo/2025.0013

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life[4]. In this context, the incorporation of rehabilitation into care models is supported by robust scientific evidence and aligns with international guidelines for strengthening eye health systems.

The World Report on Vision highlights that a substantial portion of the global burden of visual impairment requires not only prevention and treatment but also timely access to rehabilitation as an integrated component of health systems[1]. Expanding the availability of visual habilitation and rehabilitation services is therefore essential for reducing inequalities, mitigating socioeconomic impacts, and strengthening universal eye health coverage.

It is essential to distinguish between visual habilitation and rehabilitation. In congenital or early-onset visual impairment, habilitation refers to the development of skills that could not be fully acquired due to initial sensory limitations. At this stage, early intervention plays a decisive role because neural plasticity during the first years of life promotes the organization of visual behavior, sensorimotor integration, and cognitive development. Scientific evidence indicates that structured early stimulation programs promote significant gains in children's functional performance and the development of autonomy[5].

In cases of acquired visual loss, rehabilitation is predominantly adaptive. Individuals who experience visual loss after a period of typical development must reorganize previously consolidated strategies for reading, mobility, and interaction with their environment. In this context, rehabilitation aims to enhance remaining functional performance, minimize psychosocial consequences, and preserve independence. Studies have demonstrated consistent improvements in vision-related quality of life following participation in structured rehabilitation programs[6].

Current practice also recognizes the distinction between visual acuity and functional visual performance. Although the traditional ophthalmologic examination remains essential, it alone cannot fully assess the impact of visual impairment on everyday functioning. Therefore, systematic functional assessments are a critical component of care, allowing clinicians to identify specific needs, guide the prescription of optical and nonoptical aids, electronic devices, and assistive technologies, and establish individualized intervention goals[7].

In Brazil, the organization of low-vision care has progressively advanced, with increasing emphasis on systematically integrating functional assessment into ophthalmic practice. The consolidation of clinical protocols aimed at assessing visual performance, the careful prescription of optical and nonoptical aids, and interdisciplinary coordination have supported the establishment of visual rehabilitation as an integral component of comprehensive care for individuals with visual impairment[8,9]. In this scenario, early intervention has become a decisive strategy for promoting functionality, autonomy, and social participation, as well as favoring educational inclusion and workforce participation.

Visual rehabilitation is also aligned with the principles of the International Classification of Functioning, Disability and Health[10], which recognizes that disability results from the interaction between clinical conditions and environmental factors. In this paradigm, functional autonomy represents the real possibility of active participation and the full exercise of rights.

The interplay between habilitation in congenital impairments and rehabilitation in acquired vision loss demonstrates that, despite different clinical trajectories, the central objective remains the same: to foster functionality, inclusion, and dignity. In the current eye health situation—marked by a sustained rise in the prevalence of visual impairment—the systematic integration of functional assessment and visual rehabilitation into care models is a technical, scientific, and ethical imperative in modern ophthalmology. Rehabilitation means recognizing potential, reorganizing strategies, and sustaining inclusion, reaffirming ophthalmology's ethical commitment to functional capacity, autonomy, and social participation.

In this context, this special issue advances these foundations through an applied and interdisciplinary perspective, bringing together contributions that examine strategic interventions across the full continuum of visual rehabilitation. It addresses, in an integrated manner, visual training techniques and compensatory strategies, the foundational role of orientation and mobility training, and the adaptation of educational, professional, and domestic environments as key determinants of functional performance. It further highlights the importance of early visual stimulation, audio description as an accessibility resource, and sensory integration as a therapeutic axis, alongside inclusive education as a cross-cutting dimension of social participation. By integrating these

perspectives, this issue underscores that functional autonomy does not result from isolated interventions, but from the consistent alignment of clinical, educational, and environmental practices, grounded in evidence and tailored to individual needs.

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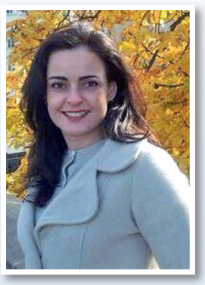
AUTHOR'S INFORMATION

» **Maria de Fátima Neri Góes**
https://orcid.org/0000-0003-3283-1346
https://lattes.cnpq.br/4276803442175508



» **Fernanda Belga Ottoni Porto**
http://lattes.cnpq.br/3705547122177092
https://orcid.org/0000-0002-4308-1766

» **Wilma Lelis Barboza**
http://lattes.cnpq.br/7647287686911668
https://orcid.org/0009-0002-4756-9723