Visual impairment and physiotherapy

The best of both: working together to support children with visual impairment and additional complex needs

A series of leaflets exploring ways that the QTVI (Qualified Teacher of Visually Impaired children) and other professionals can achieve an effective working relationship together and ensure the best outcome for children with special requirements.

This leaflet has been written by Catherine Southwell (QTVI, Wolverhampton) and Kathy Haigh (Paediatric Physiotherapist, Leeds PCT).
“A child with a combination of disabilities is likely to receive continued support from several agencies, each to address a medical, educational, therapeutic or social need. Each supporting professional will have their own expertise, priorities, methods of working and aims for the child.

In this series of leaflets we look at the above scenario and explore ways that the QTVI can support effective team work with other professionals. We aim to discover how good communication and joint working can help to:

- eliminate seemingly conflicting or confusing practice for both professionals and parents
- avoid, or solve, practical problems
- co-ordinate working practice, aims and targets to ensure the best possible outcome for the child.

Other titles in the series include:

- Visual impairment and occupational therapy
- Visual impairment and orthoptics (clinical and functional vision assessment)
- Visual impairment and speech and language therapy
- Visual impairment and specific medical needs and medication.

How the physiotherapist and the QTVI can achieve the “best of both”

Vision and movement are closely linked in many respects. The QTVI and physiotherapist will find many areas of common ground when working with the same child. Of course each professional is qualified and experienced in his or her own specialist role, and it is important that this is always recognised and respected. There will be times when both are satisfied that they are working towards the same goals. There will also be occasions when differences in practice may be contradictory. These can, however, usually be resolved through good communication, improved understanding and sometimes by agreeing on a compromise.
Background

It is recognised through both practice and research that during the last two decades there has been a steady and significant change in the population of children who have a visual impairment. Generally the proportion of children presenting with severe or complete sight loss as a single impairment has declined. This reflects improvements in the prevention and treatment of conditions that have traditionally been known to cause blindness in children. An example of this is the prompt detection and treatment of ROP (retinopathy of prematurity) in pre-term babies.

Improvements in medical care and equipment have also made survival possible for babies who are pre-term or of low birth weight, those suffering severe birth trauma and others with life-threatening developmental and genetic conditions. Many of these children may respond well to medical intervention and enjoy healthy active lives, but some may have long term medical complications, learning difficulties, physical and sensory impairments. There is now an awareness that infants and children with the most profound areas of need may also have a significant visual loss and that this will have an impact on their support requirements.

One of the most common causes of blindness in children who have complex needs is cerebral visual impairment (CVI). This is damage to the visual-processing area or the visual pathways within the brain. The eyes and optic nerve may be healthy, but the brain is not able to turn the nerve impulses into meaningful visual information. Imagine having a webcam that works perfectly, connected to a broken computer that cannot show the images. Other children may have a condition that affects the optic nerve, whereby the optic nerve has been irreparably damaged and cannot transmit signals from the eyes to the brain.
What is the role of vision in a child's physical development?

A baby’s vision develops gradually in the first year. Let’s take Michael as an example. He focuses on Mum’s face when she feeds him. Soon he will turn his head to locate her. Next he will look from side to side at familiar faces and interesting things. When he is placed on his tummy, he will learn to raise, lift and turn his head to look all around. Lying on his back, Michael will watch his hands in midline, experiment with finger movements and manipulate toys to explore them. He will grasp and study his feet too. Visually directed arm and leg movements become more accurate as he grasps and kicks at objects he can see. He learns to crawl, motivated by his visual interest in things further away. Sitting, standing, “cruising”, walking, reaching and climbing are also driven by visual curiosity, so that independent mobility is quite well established by the end of the first year.

How is physical development affected if a child has a visual impairment?

Now consider Lucy, a blind infant. Take away all visual motivation and Lucy is more at risk of delayed gross and fine motor skills such as rolling, sitting, standing and reaching out for objects. She may adopt a “head down” posture and have poor body awareness. When walking, Lucy may adopt an uneven, rocking gait with one foot leading. The incentive and confidence to move in her environment can easily be compromised as a result of visual impairment.

Our vision has a vital role in confirming where we are in space. Vision confirms what our balance tells us and stabilises us when our balance is upset. This is the reason we are advised to keep our eyes on the horizon if we are seasick. Our vision can also trick our sense of balance. We’ve all experienced the sense of moving backwards in a car or train when the vehicle next to us moves forwards. A roller-coaster simulation at the cinema can even make our stomachs flip while we sit perfectly still in the auditorium. Many children who have a visual impairment have a very poor sense of balance, so much so that changing from lying to sitting or standing can be distressing. For a blind child the sensation may be much worse, as they are not able to use vision to compensate.

It is more difficult for a child who has a visual impairment to understand language associated with space, position and movement. We learn terms like behind, on, under, hop, skip, etc initially through observing the movements of other people. The QTVI and physiotherapist can work together to devise alternative incentives to move purposefully and to develop body and spatial awareness, movement and language through co-active demonstration.
How can the physiotherapist and QTVI work together to promote a child’s physical development?

Some ways include:

- Sharing knowledge about each area of development, to help each other understand the relationships between vision and movement.
- Using experience and developing strategies to work out ways for the child to overcome the visual issues impacting on physical development. Examples might include providing appropriate visual or auditory stimulation to encourage the child to raise their head, roll or crawl.
- Setting joint targets so that everyone (parents, school staff and others) can work in a consistent way to help the child develop new skills.

The effect of physical disability on vision

We have had a brief look at the ways in which a visual impairment may affect physical development. Let’s consider the “vice-versa”. Having a severe physical disability can have a profound effect on the development of functional vision, visual access and the role of vision in learning. In addition, children who have cerebral palsy may have particular problems in visual focussing. This may add a further layer of challenge to the development of good vision. Here too, the physiotherapist has a vital role in understanding and supporting the child’s visual needs.

Co-operative problem solving

We develop visual recognition by first noticing something, then looking more closely and exploring with our other senses. This information goes into our “visual library” so we know the same object when we see it again. A child who cannot move close to look and explore relies on others for help. The following examples illustrate how children miss valuable learning opportunities because they are unable to access them.

Bobby
Bobby’s physiotherapist returns him to class in his standing frame and finds a space for him in the group. Everyone is watching Mrs Johnson make bread. Bobby can only see on his left side, but his standing frame is positioned so that he can’t quite see what Mrs Johnson is doing. Bobby gets bored and starts to shout. He is taken out of the class so the others can listen.

Anya
At home, Anya, aged three, enjoys lying under her baby gym which has switches hanging from a frame. She has a good range of movement with her legs and feet and can kick the switches to play tunes. Today at the nursery, she has a new work chair which enables her to sit straight, with her head and body well supported and her feet secured in a good position. Anya is placed by the computer and watches the display on the screen. She would love to touch it, but her chair won’t allow her to reach forward. She tries to move her feet, as this usually gets a result.
Her feet are strapped to the footrest. Anya eventually loses interest and closes her eyes. A member of staff thinks another child would get more benefit from the computer and moves Anya away.

However, with common sense, good communication and a little compromise, most access issues can usually be resolved, as the following examples show.

Mohammed
Mohammed lies over his wedge to encourage him to raise his head and strengthen his back and neck muscles. Visually, he is aware of lights and reflective materials, but unable to see objects in a normal indoor environment. The QTVI works with Mohammed each week and co-ordinates alternate visits with his physiotherapy session. With the incentive of lights and shiny materials, Mohammed will attempt to raise his head, thus achieving both visual and physical targets.

Alfie
Alfie has a moulded seat in which he is tilted back, his legs slightly outstretched. He also spends some time on the floor, secured in a symmetrical position over his wedge. Alfie’s teacher wants him to use the computer. He can’t get close enough to the screen in his chair, and is too low down when using his wedge. The physiotherapist provides a rise and fall bed to use with the wedge. Alfie now has good visual access to the computer while fulfilling part of his physio programme.

Peter
Peter wears glasses and uses hearing aids. He also needs a headrest to prevent his head flopping sideways. This interferes with his hearing aids and results in him hardly ever wearing them. Likewise, his glasses are rarely used as every head movement causes them to fall off. Peter now spends most of the day in virtual isolation. The QTVI discusses this with the physiotherapist who suggests that a neck support used during supervised learning time might achieve the same result as the headrest without compromising the use of glasses and hearing aids.

Maya
The physiotherapist recommends that Maya uses her standing frame for certain activities. Maya finds it difficult to tolerate this. The QTVI provides some sensory activities to keep the session going. Musical instruments or water play are interesting enough to make the experience positive.

Stuart
Stuart has a severe upper visual field loss. When his head is down on his chest he can only see his own T-shirt. His class teacher, QTVI and physiotherapist have worked together to help him develop head-control. When his head is up he is given motivating things to look at which fall within his reduced visual range. When he gets tired he uses a special headband on his chair to keep his head in a good mid-line position, which enables him to use his vision more effectively.
The QTVI appreciates having some input when specialist equipment is being ordered for a child. While the primary purpose is to address the child’s postural needs, some advice from the QTVI can make a real difference in terms of visual and sensory access to learning.

**Using contrast and other features**

Toys often come in bright colours, so a dark work surface helps provide a good contrast. Trays often come in yellow, which in some (though not all) cases might be the least appropriate in visual terms. A removable insert in the opposite shade intensity would be ideal to provide good contrast in all situations. Colour contrast issues also apply to other equipment. For example, mats and wedges that blend with the classroom floor covering might be a tripping hazard for an ambulant child with low vision. It is important to make things as easy to see as possible so consider the size of an object and where it is placed, how good the lighting is and if there is any glare from surfaces.

**Work trays with raised edges**

Work chair trays with raised edges and a plain surface are particularly good for children who have very low vision or who are blind as they prevent objects rolling off. An integrated bowl in a tray is a great asset for sensory work. A tray that tilts with the chair instead of remaining level is often impossible to use! Many moulded chairs do not have trays fitted. The shape of the chair often prevents a child’s knees fitting under a table, making it impossible for the child to access anything – even a switch! All children need access to a solid surface – either a tray, or a rise and fall table.

**Other considerations for the QTVI and physiotherapist in relation to children with a visual impairment and complex needs**

- How can we improve the range of a child’s arm and hand movements so that they can use their hands to explore?
- Are there exercises to “wake up” the hands and improve touch sensitivity?
- Can a child sometimes walk without their boots so they can feel the surface of the floor?
- Arm splints can prevent a child from exploring their tray. Is there another solution?
- Where is the best place to put a switch?
- If a child is blind and has hemiplegia affecting their left arm, should adults walk on this side? Or should the child take the arm of their sighted guide with their other hand?
- What sensory cue or object of reference should we use to prepare a child for their physio session?

Teachers and physiotherapists reading this will think of many more.
Conclusion

Both professionals have the same ultimate goal – to improve the life of the child. The physiotherapist works to maintain and improve posture and movement, helping the child reach their full potential. This is vital for quality of life and management of care. The QTVI’s aim is to promote access to learning, freedom to explore and inclusion in all peer group activities. Occasionally ideas and practice will differ, but through co-operative working the QTVI and physiotherapist can ensure that their shared children always have “the best of both”.

Insight magazine

Inspirational and practical information on the education, health and wellbeing of children and young people with visual impairment, including those with complex needs. Parents now receive Insight free when they become RNIB Members. Insight is also now available free to VIEW members! For details, call 0303 1234 5555 and quote “Insight offer”.

Coming soon

Into physiotherapy: welcoming and supporting disabled students

This easy-to-use resource, produced by the Chartered Society of Physiotherapy (CSP) and RNIB, aims to welcome and support disabled students into physiotherapy as a career. It offers advice to physiotherapy educators, providing them with general principles to guide activities as well as information in relation to applications, developing policies and resources including guidance for academic staff and practice based educators. Further information on this new resource is available from the CSP enquiry handling unit on 020 7306 6666.

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