Physiotherapy for Athletes with a Vision Impairment

Introduction:

Vision impairment can range from no vision – blindness – or very low vision to slight visual spectrum disorders.

The timing of the onset of the vision impairment is an important factor to consider. Athletes who were born with visual limitations may have some difficulty with conceptual constructs. Someone who has acquired their vision impairment later in life will have more contextual information to draw from. For instance, the athlete will be able to visualise an object as the athlete will have a visual concept. An athlete who has been blind since birth will require more descriptions.

To be eligible to compete at the Paralympic Games, athletes must have at least one of the following diagnoses:

- Impairment of the eye structure; and/or
- Impairment of the optic nerve or pathways; and/or
- Impairment of the visual cortex of the brain.

Athletes are classified according to their level of corrected vision and must have an impairment in BOTH eyes that meets the minimal disability criteria of:

- Visual acuity that is less than or equal to LogMAR = 1.00 (6/60); and/or
- Visual field that is less than a radius of 20 degrees

Athletes will be required to provide medical documentation from their ophthalmologist prior to seeking a classification.

This document was prepared in collaboration with Paralympics Australia and the Queensland Academy of Sport.

General considerations:

Illumination: The amount of light available to enter the eye is critical to visibility. By simply increasing the level of light during training can have a significant impact. Conversely athletes that are sensitive to light will be negatively affected by too much illumination. In these cases items such as sunglasses or hats can be simple solutions. The time of the day that outdoor training occurs can also have an impact. Sunlight angled lower in the sky may increase glare and affect the athlete's performance. Specific coaching or compensatory strategies can help athletes to perform when these conditions are present in competition.

Field of View: Some athletes may have visual field issues affecting vision. For example, some can see through a small central field (like a pin hole) and others might have only peripheral ranges. Providing visual demonstrations within the appropriate field is important.

Contrast: The degree of colour difference between an object and the background in the contrast. Glare can cause objects to blend together. Athletes with low vision really need good contrast. Therefore using brightly coloured balls or objects against darker backgrounds will assist the athlete. Training on an athletics track will be easier than training on grass due to the high contrast in lane lines. It is very hard to get this contrast on grass with white marking. If you can find out which colours are best seen by the individual this can help. Using larger markers is a good option. Consider painting implements like a discus or ball in the colour that is seen best.

Size: Using larger print may enable information or images to be seen more clearly.

Environment: Familiarity is important in order to assist with independence and trust in the training environment, and it is important to have some consistency so that the athlete becomes familiar with layout. Consider the effect of unfamiliar environments on the athlete (e.g. travel situations), and work with them to provide guidance and orientate them in their new environment. Working with a buddy in new environments like a gym is helpful.

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Communication is critical: Use precise vocabulary and descriptions. Be prepared to modify demonstration techniques, provide tactile demonstration or have the athlete stand close enough and copy a demonstration from you. Any tactile input should have prior consent from the athlete. Consider using iPads or similar devices for feedback as the athlete can enlarge or manipulate the image as needed.

Ask the athlete how they would describe something and adapt language to match the athlete's to improve understanding. Check the athlete understands instructions by asking questions or getting them to explain in their own words what is expected, to clarify what has been understood.

Speak clearly and at normal volume.

Physiotherapy Considerations:

- Physiotherapists can help best when they understand the specifics of the vision impairment, so start by asking the athlete to describe their vision. They may have acuity problems (vision is not clear) or field issues (they cannot see through the full range).
- Establish if there is a preferred situation or environment that promotes better vision, for example a vision impaired athlete may have better vision in their left eye, so by making a small change to where you stand to communicate or demonstrate a skill or task may make a huge difference.
- Slow down the exercise or movement pattern to ensure the skill is practiced and learnt effectively.
- Without optimal visual input spatial awareness, proprioception, balance and coordination may be affected. It is important to assess this and incorporate strategies to address any deficits that exist.
- General orientation can be difficult when the acoustics of the environment make it difficult to focus on the origin of the noise (e.g. in gyms or training environment).

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- Consider the effect of environmental hazards and try to minimise injuries due to trips and collisions with objects. Ensure areas are clear from obstacles, and give detailed descriptions of the area and explain in advance any obstacles or hazards.
- Consider the size and colour of exercise equipment and use larger, brighter equipment in the colour that the athlete is able to see best.
- The use of tactile markers. Raised tape or string to mark lines or boundaries can be helpful.
- Some athletes find pacing and tempo work challenging. Auditory cues such as provided by a metronome may assist athletes with maintaining a certain pace. Using auditory equipment (e.g. auditory balls with bells) can also be useful to incorporate into exercises or activities.

Resources, Links and References

Paralympics Australia https://www.paralympic.org.au/wp-content/uploads/2018/07/Vision-Impairment-APC-Classification-Information-Sheet-June-2018.pdf

Paul Ponchillia, Coaching Athletes with Visual Impairments, Western Michigan University. Department of Blindness & Low vision Studies, 2016.

https://britishblindsport.org.uk/wpcontent/uploads/2017/07/VisuallyImpairedFriendlyAthletics.pdf

https://britishblindsport.org.uk/educationandresearch/education/

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