

## **CHILDREN'S VISUAL SKILLS**

To a large extent vision is a learned skill which embraces the ability to identify, interpret and understand what is seen. It requires not only correct focusing but also the efficient mechanical functioning of the eyes and brain and a high degree of co-ordinated activity of the two eyes.

Many common children's vision problems affect their ability to see clearly and sharply and are usually detected in routine school check-ups. There are other problems which are not as easily identified. These problems are a result of the eyes not teaming together well or the visual system functioning inefficiently.

### **Clear distance (visual acuity)**

A child should be able to see distant objects—more than six metres away—clearly and sharply. Sharpness of vision, or visual acuity as it is properly known, is measured using the familiar letter chart which has letters of steadily decreasing size. Children who cannot read are assessed using shapes or pictures rather than letters.

### **Change in focus (accommodation)**

The child must be able to alter focus from distant to close objects and vice versa and to see both clearly. The ability to achieve this change in focus—called accommodation should be quick and effortless.

The need for efficiency in changing the distance of focus is understood if we think about the process of copying from a blackboard. The child must look quickly from the blackboard to the book on a desk and back to the blackboard, rapidly changing accommodation each time.

### **Aiming the eyes (fixation)**

Fixation is the ability to point or aim the eyes exactly at an object at the same time. If the eyes do not point precisely at the same object the brain must interpret a slightly different image from each eye. Headaches, tiredness, confusion or, in severe cases, double vision can result.

### **Eye movements (saccades and tracking)**

There are two main types of eye movements. Both require the eyes to work together as a team. The first type are the quick and accurate movements which are used, for example, when the eyes move from one word to another while reading. These are jumping movements which are properly called 'saccades'.

The second type of eye movements are known as 'tracking' and these should be smooth and accurate.

Tracking movements are used when the eyes follow a moving object such as a ball in flight or vehicles in traffic.

Children who frequently lose their place while reading, or who have difficulty in watching the ball while playing sport, may have poorly developed eye movement skills.

### **Depth perception (stereopsis)**

Depth perception is the ability to determine relative distance. Accurate depth perception is required, for instance, to hit a ball while playing sports or to park a car accurately. Stereopsis is one of a number of cues which the brain uses to judge relative distance and requires co-ordinated functioning of both eyes.

### **Side vision**

Peripheral or side vision is the ability to see and interpret what is happening to the sides of the field of vision while looking straight ahead. It is clear that being able to see to the sides is important while driving a car, but its importance in writing is not so obvious. Poor peripheral vision can lead to crooked and messy writing because the child learning to

write cannot see the line on either side of the point at which he or she is writing. Consequently it is difficult for such a writer to judge the direction in which to head.

### **Eye-hand co-ordination**

Eye-hand co-ordination is a skill in which the brain guides movement of the hands based on the information it

receives from the visual system. For example this ability is important when tracing a line with a pencil or throwing a ball against a wall and catching it again. Eye-hand co-ordination is also important in team sports as well as driving, hike riding and running in an obstacle race—in fact in just generally moving about in the world.

### **Convergence**

To see clearly and without confusion the two eyes must be aimed precisely at the objects the child is trying to see. Unfortunately not everyone develops this ability as they should in childhood. Inaccurate alignment of the eyes can result in visual fatigue, blurred vision, poor judgement of depth, sore eyes, headache and mental fatigue.

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