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OPTOMETRIST

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Glossary of terms

Accommodation (also known as focusing)
The eye's ability to adjust focus on objects at varying distances. See Near point of accommodation and accommodative facility. Behavioural theory suggests that focusing is closely related to the identification mechanism which ensures that the object under scrutiny is the most clearly seen ensuring it remains the centre of attention. See near point of accommodation and accommodative facility.

Accommodative Facility
The eyes ability to repeatedly change focus from one distance to an other. Often measured by use of special flipper lenses. Measurement of each eye in turn is usually made followed by comparing the performance to that of both eyes working together.

Amblyopia ("lazy eye")
A visual defect that affects approximately 1-2% of the population. Amblyopia involves lowered visual acuity (clarity) and/or poor muscle control in one eye. The result is often a loss of stereoscopic vision and binocular depth perception. Vision therapy can benefit this condition, but early detection is very important. For many years, it was thought that amblyopia (lazy eye) was only amenable to treatment during the "critical period". This is the period up to age seven or eight years. Current research has conclusively demonstrated that effective treatment can take place at any age, but the length of the treatment period increases dramatically the longer the condition has existed prior to treatment. Research has also demonstrated that patients with amblyopia are more likely to sustain injuries resulting in the loss of their good eye than individuals with two good eyes. There are many reasons that early childhood eye examinations are essential.

Astigmatism
A distortion in the vision caused by irregular shape of the eye or its components. As for example a rugby ball shape.

Auditory Perception
The ability to process that which is heard. Although hearing may be perfectly normal. one may have difficulty in making sense of what one has heard.

Behavioural Optometry
An international branch of optometry that specialises in the practice of vision therapy. Behavioural optometrists (also called developmental optometrists) will sometimes consider how environmental, nutritional and/or behavioural factors affect visual health. The discipline is important in rehabilitation of poorly functioning eyes.

Binocular
Of or involving both eyes at once.

Binocular skills
A term used to cover a wide range of skills required in using the two eyes together to help us understand our visual world. This is a three dimensional space and includes the efficient use of the eyes to see in 3D, (stereoscopic vision) . Difficulties in binocular skills, including focusing, eye alignment and eye movement accuracy and efficiency can reduce speed of processing of visual information. Sometimes people 'inhibit' or suppress the image of one eye either temporarily or on a long term basis to avoid confusion. This can significantly reduce understanding of text that is read and slow down cognitive (thinking) skills.

Binocular Depth Perception
A result of successful stereo vision; the ability to visually perceive three dimensional space; the ability to visually judge relative distances between objects; a visual skill that aids accurate movement in three-dimensional space.

Binocular Vision
Vision as a result of both eyes working as a team; when both eyes work together smoothly, accurately, equally and simultaneously.

Binocular Vision Disability
A visual defect in which the two eyes fail to work together as a co-ordinated team resulting in a partial or total loss of binocular depth perception and stereoscopic vision. At least 12% of the population has some type of binocular vision disability. Amblyopia and strabismus are the most commonly known types of binocular vision disabilities. To find out more about these visual conditions, see underneath.

Convergence
The ability of both eyes to turn inwards together. This enables both eyes to be looking at the exact same point in space. This skill is essential to being able to pay adequate attention at near to be able to read. Not only is convergence essential to maintaining attention and single vision, it is vital to be able to maintain convergence comfortably for long periods of time. For good binocular skills it is also to be able to look further away. This is called divergence. Sustained ability to make rapid convergence and divergence movements are vital skills for learning. See jump convergence.

Cross Laterality
See laterality.

Depth Perception
The ability to see in 3D or depth to allow us to judge the relative distances of objects. Often referred to as stereo vision or stereopsis.

Divergence
The ability for the eyes to turn outwards together to enable them to both look further away. The opposite of convergence. (see above) It is essential for efficient learning and general visual performance to have good divergence and convergence skills.

Distance Acuity
The ability to see clearly at a distance. In Europe and the UK this is usually measure at 6 metres.

Eye Movement Skills
A term to cover the whole range of eye movement skills required for efficient vision. These are pursuit eye movements, saccadic eye movements, fixation skills and ocular motilities. These terms are all found elsewhere in the glossary.

Facility
See accommodative facility

Figure Ground
The ability to separate objects from their backgrounds. An example is to be able to see the wood from the trees. In reading this skill is essential to enable the recognition of letters and words from a body of text or indeed the background colour of the page itself without distractions. Distractions can come from the page

itself of indeed from the area in the immediate vicinity.

Fine motor co-ordination.
Usually refers to the co-ordination needed to use a pencil but may also affect other areas where fine manipulation skills are needed.

Fixation Skills
The ability to stay looking at an object for a long enough period to enable recognition or cognition to be possible. Poor fixational skills often lead to poor attention and performance especially at near related tasks.

Fundus
The medical term applied to the retina, which is the structure at the back of the eye. This is sometimes also known as the fundus occuli.

Fusional Reserves
A series of measures to probe how much stress the convergence and divergence mechanisms are able to cope with when placed under stress. This is linked to the ability to maintain good clear comfortable single vision whilst keeping control of the focusing mechanism. Analysis of the results of this test are complicated. If results are low it can be expected that difficulty in concentrating for long periods will be experienced. Often headaches can result in prolonged periods of close work. Children in particular, but also adults, often show a tendency to avoid prolonged close work when the fusional reserves are low.

Glaucoma
Glaucoma is not one disorder but a range of conditions in which the pressure inside the eye becomes too high for the eye. This results in damage to the optic nerve at the back of the eye which can lead to loss of vision. The most common type of glaucoma is painless and is often discovered when permanent loss of vision has occurred. Very high pressures are considered to be a medical emergency and can lead to rapid loss of vision if not treated.

Routinely tested, optometrists are able to detect early signs of this condition and the tests are painless and relatively quick and are recommended for everyone over the age of forty and also those with a strong family history.

Gross Motor Skills
Large body movements such as walking, jumping, skipping, balancing and ball skills.

Laterality
Are you left handed or right handed, right or left eyed, left or right footed? This is known as laterality. Preference is usually consistently left or right sided. Sometimes a child may be left handed but right eyed or visa versa, which can cause confusion. This is described as cross laterality.

Medium and long term memory
The ability to remember details from hours or days before, and to recall

Motor Skills
Skills required to ensure that the balance mechanisms are functioning properly in regard to their relationship with vision. Poor integration will have an effect in an individual's ability to cope when moving around and can effect sport and hand to eye co-ordination.

Motor Perceptual
This describes the way the brain links with the body's capacity to respond physically to the environment

around.

Near Point of Accommodation
The closest distance from the eyes that reading material can be read. This distance varies with age. It is often measured in each eye separately and both eyes together. The results are compared to one and other. See accommodation and accommodative facility.

Near Point Stress
The term used when close work is causing the individual unacceptable stress. This is often seen when the relationship between accommodation and convergence is maintained only by excessive effort. The response to this is either a tendency to avoid close work (known as evasion) or alternatively, to use progressively more and more effort. This is typified by a tendency to get closer and closer to the work and then to suffer slower work rates, headaches and eye discomfort. Writing often becomes laboured and difficult, showing a tight pencil grip and excessive pressure. They may complain of blurred vision, print getting smaller, coloured fringes around text which sometimes moves on the page and possibly double vision. There is often a generalised ocular discomfort and there can be complaints of feeling 'washed out' after prolonged concentration. Symptoms can vary from day to day.

Oculist
A term used to describe an eye specialist, more commonly known as an ophthalmologist in the UK. The term oculist is little used now.

Ocular Motilities
A term used to describe the range of eye movements made by the eyes. These movements are controlled by six muscles on the outside of each eye known as extra-ocular muscles. Defects in any one of the muscles can cause inefficiencies in eye movement control and increased effort to maintain comfortable clear single vision.

Oculomotor Skills
The ability to track or follow a moving object and the ability to move the eyes accurately and smoothly from one point to another. This is a vital skill in activities such as reading.

Ophthalmic Optician
An old term for what is now known as an optometrist. The term is still used by some but was largely abandoned because of the possible association with unqualified opticians after de-regulation of the optical market. All optometrists must be qualified and registered.

Ophthalmologist
A doctor of medicine specialising in diseases of the eye and surgery.

Optician
A person who understands how to read a prescription for glasses and who is able to advise, supply or manufacture spectacles to the prescription. In the UK the term optician is often used in place of the term optometrist. Dispensing Opticians can be qualified but many are not since this is no longer a protected title and anyone can call themselves by this name. Only qualified opticians or optometrists are allowed to dispense spectacles to children, the partially sighted and the blind! See Ophthalmic optician, ophthalmologist, oculist, and optometrist.

Optometrist
A person qualified to recognise visual health problems and prescribe spectacles, contact lenses and dispense low visual aids. Some practitioners also offer Vision Therapy.

Orthoptics
The eye muscle training techniques of orthoptics are included within vision therapy. Orthoptics specifically treat eye teaming skills and visual acuity and do not treat other visual dysfunctions that are addressed by vision therapy procedures. Orthoptics first became popular in Europe in the 1900s. Orthoptics are still practiced in most hospital eye departments and at many optometrist practices.

Perceptual Tests
Test to see how a person processes and understands visual information. These are often used to see how best a person learns. Some people like to learn by being presented with a big picture all in one go while others prefer to learn in a sequential way with each element required being presented in a consecutive and logical order. Most people learn by a combination of thee processes but some with learning problems will only be able to use one or the other.

Peripheral Vision
The ability to see or be aware of the vision around about us or to the sides. defects in this ability can be caused by diseases such as glaucoma, tumours, retinal detachments and strokes to name but a few. Good peripheral vision is essential in driving, most sports and reading. Peripheral vision can be tested using visual field testing instruments.

Pursuit Eye Movements
The ability to move the eye to remain in accurate visual contact with a moving object within the visual field. This is complicated by the ability to perform this task not only when the head and body are stationary, but also, when the head and body are moving.

Refraction
The part of an eye examination that determines the refractive error.

Refractive error
The measure of the error of focus of an eye compared to an assumed normal point of zero. The error is measured in dioptres which is the reciprocal of the focal length in centimetres. The refractive error will include measurements for myopia (short sight), hypemetropia (long sight) astigmatism and presbyopia (the loss of focusing power due to age for near work).

Saccadic Eye Movements
These are the movements when the eyes 'jump' very quickly from one object to another. An example is when the eyes move very fast to look directly at an object that may be coming in from one side to enable a better look to be made such as in driving. Another example is that of moving from one word to the next letter group in reading. This is usually sequential in nature and very fast. Problems often arise when the saccadic movement is consistently over or under shooting. When this happens there is often a tendency to lose ones place during reading and for there to be a loss of comprehension and fluency in reading.

Sight
The ability to resolve or 'see'. Usually thought of as the ability to see very small objects at a long distance. Sight should be thought of as a different skill than 'vision, which involves the ability to distinguish the small objects and to interpret them. This depends on adequate visual experience and good sight.

Short term memory
The ability to remember information that has been heard recently. I.e. over a very short space of time. This information is often associated with symbols and is important for tasks such as learning to read, copying, spelling. Visual recall is inevitable required in the early stages of learning to read - sight vocabulary and flash

cards etc.

Spatial Skills
The ability to relate to areas around. It affects practical skills like handwriting , body posture and at times, subjects at school such as CDT

Stereo Vision (stereopsis or stereoscopic vision)
A by product of good binocular vision; vision wherein the separate images from two eyes are successfully combined into one three-dimensional image in the brain.

Strabismus ("crossed eye", "lazy eye", "wandering eye", esotropia, exotropia, hypertropia)
Affects approximately 4 out of every 100 children. It is a visual defect in which the two eyes point in different directions. One eye may turn either in, out, up, or down while the other eye aims straight ahead. Due to this condition, both eyes do not always aim simultaneously at the same object. This results in a partial or total loss of stereo vision and binocular depth perception. The eye turns may be visible at all times or may come and go. In some cases, the eye misalignments are not obvious to the untrained observer.

Toric
A lens that corrects astigmatism.

Vision
The act of perceiving and interpreting visual information with the eyes, mind, and body.

Vision Therapy (also known as vision training)
Therapy involving exercises which are aimed at improving visual skills such as, eye teaming, binocular co-ordination and depth perception, focusing, acuity (clarity of sight), and "hand-eye" or "vision-body" co-ordination. Vision therapy can involve a variety of procedures to correct neuro-physiological or neuro-sensory visual dysfunctions. Practiced by optometrists. See Vision Therapy for more information.

Visual Acuity
The ability to see clearly at a distance. In Europe and the UK this is usually measure at 6 metres. It is usually given as a fraction where the top number is the distance at which the test is performed. The second figure is the level of vision. It is usual to think of 6/6 as normal. In the USA it is known as 20/20 because the distances are measured in feet instead of metres. The larger the number on the bottom of the fraction the worse the vision. Many people are able to see better than 6/6 and figures of 6/5 or even 6/4 are not uncommon.

Visual Analysis skills
The ability to discriminate between visible likenesses and differences in size, shape and colour.

Visual Field
The area of vision to the side when one is looking straight ahead. Defects in the sensitivity of the peripheral vision can be helpful in diagnosing many types of visual and general health conditions.

Visualisation
The ability to created a picture in our mind's eye what we see, have seen or want to create in our mind to see and to use these images in thinking. Some people under use these areas of skills and this can effect their ability to match images with those held in memory causing problems in decoding skills. Others have problems in matching recalled images with sounds affecting encoding skills. Visualisation skills are important in spelling.

Visual Memory

The ability to hold visual images in memory to be recalled at a later date. Psychologists often separate this area into several discrete sub areas referred to as long term memory, short term memory and working memory.

Visual Motor Skills
The ability of our eyes to accurately guide our hands. (i.e. hand-eye co-ordination). Good Visual Motor skills are required in handwriting, drawing and sports.

Visual Perception Skills
A range of skills needed to understand and interpret the pictures created by the eyes when light is focused on the retina. The interpretation enables humans to take appropriate action as a result of what he or she sees. There are many areas of skills. Behavioural optometrists tend to assess many of them. Such skills include the following:- figure-ground , form constancy, visual discrimination, visual memory, visualisation and visual analysis. Selected areas are usually assessed during a full Functional evaluation.

Visual Spatial Skills
The ability to judge the relative position of different objects. This ability is needed to tell the difference between similar letters such as 'b' and 'd', 'p' and 'q', 'm' and 'w'.