



Optical instruments

Lecture 9

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Synoptophore

Synoptophore is an instrument used for assessing and treating of ocular motility disorders very reliably and performs a comprehensive assessment of binocular vision. It provides standard measurements and easy treatments of binocular abnormalities by training the ocular muscle allowing the visual stimuli to be projected on each eye separately.



Diagnostic Uses of Synoptophore

1. Measurement of Simultaneous Perception (The first grade of BSV)
2. Measurement of the objective and subjective angle of deviation.
3. Measurement of the amount of deviation at near eye accommodation, simulating near viewing (Accommodative convergence to accommodation ratio (AC/A ratio)).
4. Measurement of Sensory (SF) and Motor Fusion (MF) (The second grade of BSV)
5. Measurement of Stereopsis (The third grade of BSV)

Therapeutic Uses of Synoptophore

1. Suppression
2. Retinal correspondence
3. Correction of Eccentric Fixation (Foveal, Outer foveal, Peripheral)
4. Accommodative tropia
5. Correction of heterophoria

Parts of synoptophore

It consist of the base, which connects horizontally movable arms.

Base also contains chin and forehead rest and buttons for adjusting of intensity and frequency of the light sources, which are placed in movable arms. as well as two tubes each with a + 6.5 D ophthalmic lens at each end

Basic principles

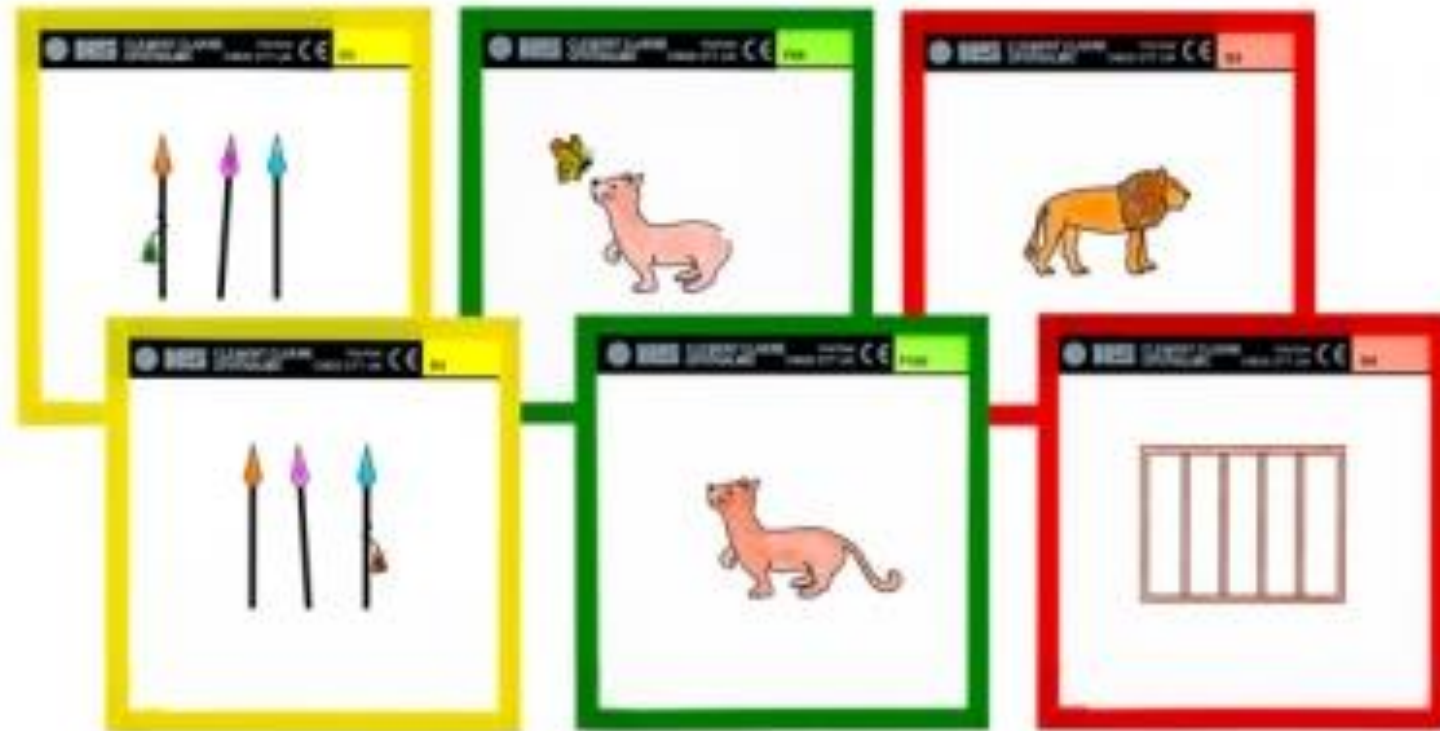
The +6.50 D eye-pieces consist of collimating lenses, which helps the patient to relax their eye-accommodation, as if the patient looks at infinite distance. A plane mirror reflects 90° along the two optical tubes. These tubes can move at horizontal, vertical and rotary direction in relation to their holding so that the two projected images can be moved in relation to each other.

The tubes are 15.5 cm in length, so the transparencies are positioned on the focal point of the eyepieces so that the outgoing rays are parallel and do not require adjustment by the patient so the condition that is created is that the images are positioned in the infinite range. A light source is placed at the end of the tubes, which evenly illuminates the transparencies. The patient sees each slide separately according to the corresponding eye. The scales on the Synoptophore, measure the displacement, degrees and Prism Dioptre.

Slides

- ✓ The first grade of BSV, Simultaneous perception (red binding), is tested using two dissimilar pictures.
- ✓ The second grade of BSV fusion (green slides), two similar pictures each with an incomplete “control” .
- ✓ The third grade is a stereopsis (yellow slides)

assessment can be obtained using two images of the same object, taken from slightly different angles, to indicate depth perception.



GRADES OF BINOCULAR VISION

- SIMULTANEOUS PERCEPTION
- FUSION
- STEREOPSIS

