

# SCREENING

For use by ophthalmologists, general practitioners,  
pediatricians and orthoptists.

# SCREENING SPECTACLE

## **BEFORE TWO YEARS OF AGE**

The current possibilities for early treatment of strabismus has incited us to search for a simple method of screening which is applicable at a very young age. Strabismus is responsible for a great number of unilateral, functional amblyopic cases and a prevention of these amblyopias is altogether possible if an adequate treatment is applied very early, from the time of appearance of the strabismus.

If we consider that strabismus appears before one year of age in 50% of cases, and between 1 and 2 years in 35% of cases, we can understand the interest in a screening test that can be used on a young baby, before the age where a cover test can be done.

This is why, since 1976, we have designed and utilized spectacles with sectors (spectacle wears) for this early screening.

**Spectacle wears with sectors used for screening** are mounted with plano lenses and equipped in their nasal portions with a vertical opaque band (sectors). The distance between the two vertical edges of the sectors, as a function of the interpupillary distance, is 32mm for babies less than 10 months and 35mm for infants from 10 to 24 months.

## **Strabismus screening**

When a child fixates a small object situated 60cm in front of him/her, **we observe the position of their eyes on either side of the sectors.**

- If the two irises are equidistant from the edge of the sectors, then there is no strabismus.
- If the iris of the right eye is seen in its entirety while the iris of the left eye is partially obscured by the sector, then a convergent strabismus or squint of the left eye exists. The reverse situation is also possible where the right eye is strabismic.
- If the strabismus is monocular, it is always the same iris that is partially masked behind the sector. If the strabismus is alternating, the right iris will be partially obscured as often as the left one.
- the case of a divergent squint, the sclera will be largely visible between the edge of the sector and the iris of the deviated eye.

Via this extremely simple **static exam** we can, before 1 year of age, screen a small angle strabismus or rule out the possibility of a pseudostrabismus due to an epicanthus (the epicanthus is in effect masked by the nasal sectors).

The spectacle wears with sectors used for screening exist in various sizes:

The **“Baby Dépistage” (T 36).**

Sectors at 32mm (edge to edge),  
for babies up to 10 months, with small interpupillary distances.

The **“Tropique Dépistage” (T 38, 40, 42) a reversible bridge.**

Sectors at 35mm, for infants from 10 to 24 months.  
The Tropique Model 2 with straight temples and reversible bridge,  
which permits its stability on the nose of in

The importance of early screening is particularly evident when we know that 4% of infants have an eye that deviates, that is approximately 28000 infants per age group in the population of a country of 60 millions inhabitants. It therefore consists of 90000 infants between 3 months and 3 years, for whom early treatment would permit the avoidance of amblyopia which presently afflicts 65% of these infants.

### **Amblyopia screening**

We thereby complete the observation by a **dynamic exam**, called a **Right/Left test**, which makes an amblyopia risk evident:

- We move a small toy from right to left in front of the infant who is wearing the spectacle with spectacle wears, at the level of his/her eyes and in a manner that encompasses one extreme to the other of his/her visual field.

Three observations are possible. For example in the case of a convergent squint of the left eye:

- If the infant looks right with the right eye, looks left with the left eye, without any significant head movement, this means that the vision of each eye is good, i.e. there is no amblyopia. This is an **alternating strabismus response**.
- If the infant looks to the right with the right eye without moving his/her head, however for an object presented in the left visual field, he/she turns the head to the left in order to maintain fixation with the right eye for the longest time possible; this signifies that a strong right eye preference exists. Under this circumstance there is a high risk of amblyopia of the left strabismic eye which only picks up fixation in the extreme left visual field. This is a **head rotation response**. Preventative amblyopia treatment must be quickly instigated.

- If the infant looks to the right with the right eye and maintains this fixation with the right eye throughout the extent of the visual field, from right to left, by turning the head and trunk, like a spinning top: This is the **spinning top sign**. It indicates an amblyopia which is already being manifested by the strabismic eye. Urgent intervention is required.

Strabismic functional **amblyopia**, treated before 2 years of age is completely curable in 95% of cases, whereby at 5 years, the recovery, which is often only partial, is obtained in but 50% of cases. Treatment by occlusion, spectacle wears (sectors) or optical penalization are considered current practice and we see more and more babies with spectacles.

Optical wear for young infants is no longer a problem thanks to the different available models of frames by “**Tropique**” with a low bridge, perforated temples for passage of a holding cord, and spring loaded hinges for maintenance of a stable position on the flat noses of the wee little ones.

The sectors were originally manufactured with the use of adhesive paper or translucent adhesive plaster, adhered in vertical bands on the nasal portion of the lenses. During the first clinical trials it became evident that these movable sectors risked becoming unglued, obliquely or asymmetrically positioned by an unsuspecting user. This make shift method thus had the major inconvenience of rendering the test invalid if it was poorly administered.

This is the reason it became indispensable that the sectors be affixed to the spectacle lenses. This was realized by a preliminary unpolishing of the desired surface of the nasal portions of the lenses. Hence the **screening spectacles with sectors** (spectacle wears) were born (Trademark models).

A French Health Authority decision dated the 20.02.1980 has as its subject the best conditions required to realize the putting into place of early screening measures for infants’ visual deficits. Health examinations giving rise to obligatory certificates (in particular at the 9th and 24th month) provides for a systematic exam of the visual system.

This decision was reinforced in 1997.

Screening of strabismus and visual problems happens during the 9th and 24th month pediatric exam. Spectacle wears thus have their place in pediatric consultations of early infancy. Information concerning the possibility of early treatment of very young babies before 6 months of age must be largely disseminated among pediatrics, general practitioners and Mother and Child centers . This so serious visual deficits in young strabismics can be prevented in instances where the deferment of treatment after 2 or 3 years of age risks the establishment of an amblyopia.

## **AFTER TWO YEARS**

For children over 2 years of age, we can use spectacles with a reversible bridge equipped with an opaque and a plano lens (this avoids the child putting his finger in his eye!). The visual acuity can be considered as normal when it is found to be 20/35 at 2 years and a half, 20/25 from 3 to 4 years and 20/20 (6/6) at 5 years. (The Tropique Monocular Lens Plan for visual acuity screening.)

**The Tropique-Monocular (T 42 and 44),**

with reversible bridge and straight temples.

Latent **hyperopia** can be tested with the help of a reversible frame equipped with an opaque and a +1.50D lens. (The “*Tropique Monoculaire v. +1.50*” for hyperopia screening). All 5 year old children retaining 20/20 (6/6) vision with the +1.50 lens must be referred to an ophthalmologist who is the sole person to judge for the necessity of an eventual correction.

**The Tropique-Hyperopia (T 42-44).**

Checking of monocular visual acuity among older children  
(as of 5 years: accepts a convex lens).

**THE TROPIQUE SCREENING CASE**  
researched at the request of Dr. SARNIGUET-BADOCHÉ

consists of:

- 1 Tropique Baby Screening frame - 32mm sectors, T 36
- 3 Tropique Screening frames - 35mm sectors, T 38, 40, 42.
- 1 Tropique Monocular v. plano frame T42, 44
- 1 Tropique Monocular v. +1.50 frame T 42, 44

*It is intended to screen for:*

- *a strabismus at the earliest age*
- *a risk of amblyopia (Right/Left test)*
- *to study the visual acuity of each eye (monocular spectacles)*

*and starting from 2 years to put into evidence:*

- *a latent hyperopia (tolerance test with +1.50) starting at 5 years.*