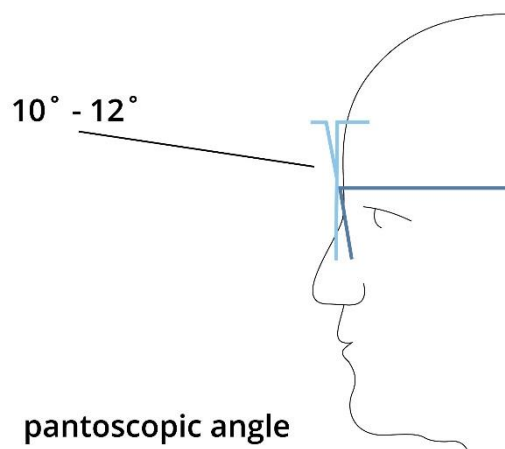


4 Spectacle frame pantoscopic angle measurement

4.1 Introduction

Pantoscopic angle is the important parameter which is used for centration of spectacle lenses. Pantoscopic angle in standard spectacle frame is usually 10 degrees. In this context is very important to centre different spectacle lens with respect to this pantoscopic angle. For example, for traditional progressive lenses is not suitable to choose spectacle frame with zero pantoscopic angle. This spectacle frame has usually doubled side.



Picture 4.1: Pantoscopic angle of the frame (inspired by 2020mag.com 2013)

4.2 Goals

- Measure pantoscopic angle of the spectacle frame with protractor
- Measure pantoscopic angle of the spectacle frame with instrument for measurement of pantoscopic angle
- Calculate vertical decentration of the spectacle lens' optical centre with respect to pantoscopic angle

4.3 Equipment

Spectacle frame, handy PD ruler or PD meter, writing staff, calculator, instrument for measurement of the pantoscopic angle

4.4 Methods

Measure pantoscopic angle of the spectacle frame with protractor

Put the spectacle frame of the patient and adapt it to protect again falling down. With protractor try to measure pantoscopic angle. The pantoscopic angle is angle between general vertical line and

vertical axis of the spectacle frame. Pantoscopic angle is usually from 5 to 15 degrees. If the angle is smaller you can adapt the spectacle frame.

Measure pantoscopic angle of the spectacle frame with instrument for measurement of pantoscopic angle

Let's measure pantoscopic angle with instrument for measurement of pantoscopic angle. This instrument is put on the spectacle frame and with gravity weight you can read pantoscopic angle of the spectacle frame.

Calculate vertical decentration of the spectacle lens' optical centre with respect to pantoscopic angle

$$v = (d + 13) * tg\alpha \quad [\text{mm}], [^\circ] \quad (18)$$

4.5 Results

Measure pantoscopic angle of the spectacle frame with protractor

$\alpha_1 =$

Measure pantoscopic angle of the spectacle frame with instrument for measurement of pantoscopic angle

$\alpha_2 =$

Calculate vertical decentration of the spectacle lens' optical centre with respect to pantoscopic angle

$v =$

4.6 Discussion

Spectacle lenses should be properly centered if we want to maintain point to point imaging. Proper centration means that spectacle lens' optical axis will go through real eye's rotation center. We can center lens with respect to so called perpendicular view or we can calculate vertical decentration. For the calculation technique is important vertex distance. Usually 1 degree of pantoscopic angle means 0.5 mm downward in vertical decentration.

4.7 Conclusion, notes, comments

What is the value of pantoscopic angle in your case/example?

What is the approximate value of vertical decentration if the pantoscopic value is 10 degrees? Is there any general rule about the size of vertical decentration?