Organisation of the Refraction

- I write the date of the meeting on your Emails – the time for presentation will be mostly on wednesdays at 10 o´clock or on tuesdays at 11 o´clock

- The final exam – after (during) every presentation I will give you a homework, I will give you the time for preparing and you will send me it by Email

- The autumn semester – theoretical part
- The spring semester – theoretical + practical part

- **sokolovasidlova@mail.muni.cz**

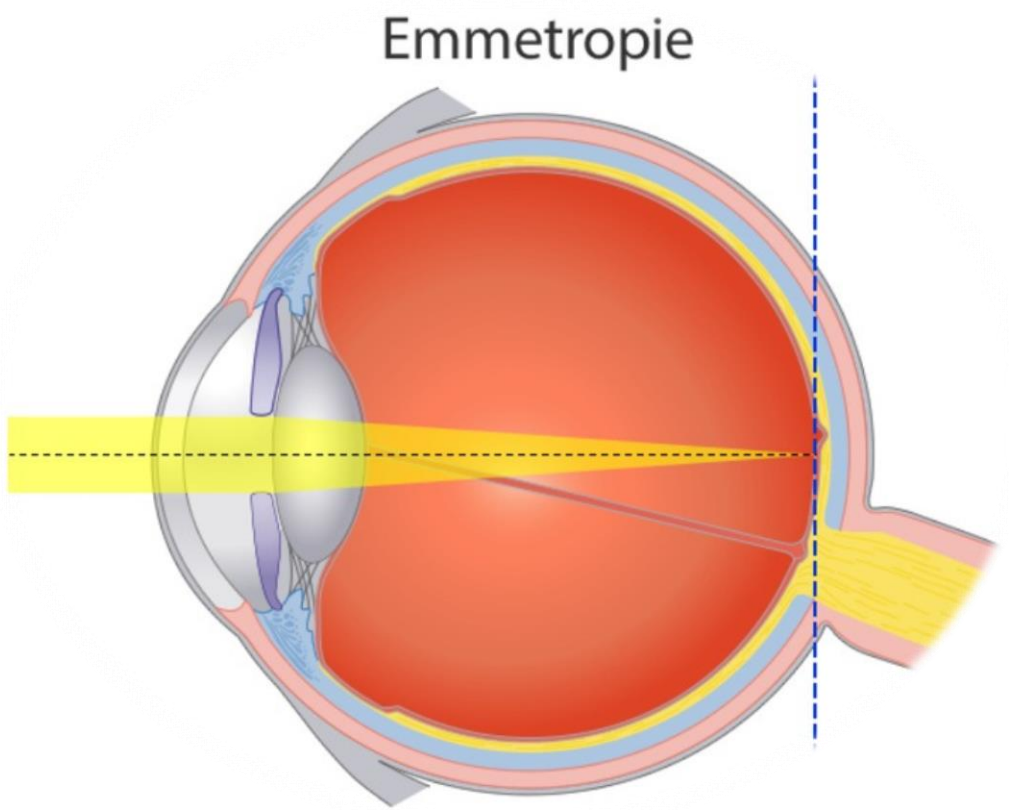
Introduction of Refraction

Jana Sokolová Šidlová

Emmetropic eye (from greece emmetros and ops)

- No refractive error
- Parallel rays being focused upon the retina (fovea centralis retinae).
- Optical power and the length of the eye are in the right proportions

  (l = 24 mm a φ = 58,64 D)
- The emmetropic eye sees clearly distant object without accommodation
- With the right ratio of the two quantities, the far point of the eye is at infinity



Reminder of the main points

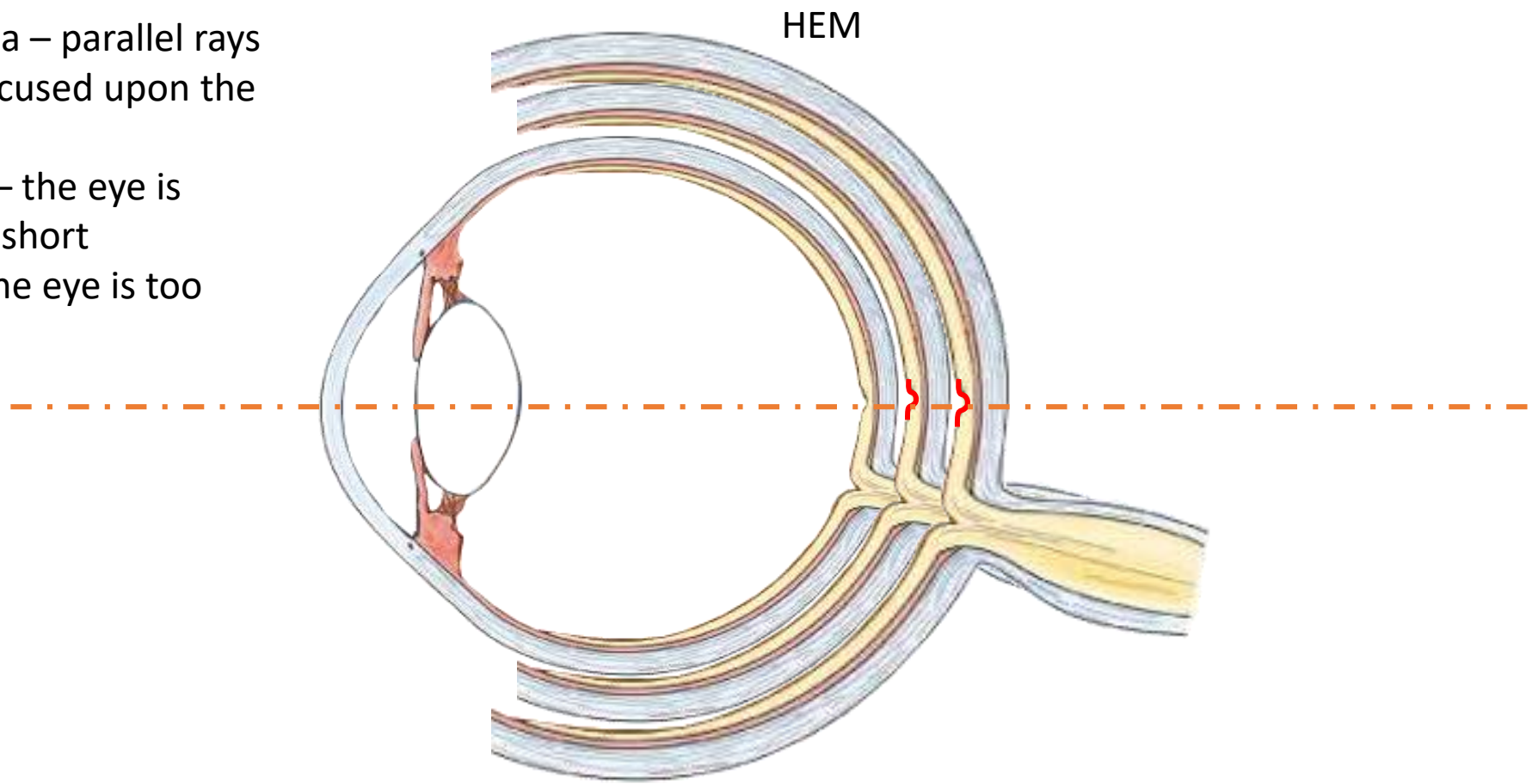
- **The far point** of accommodation is the point conjugate with the retina when accommodation is fully relaxed.

- **The near point** of accommodation is the point conjugate with the retina when accommodation is fully exerted.

- **The amplitude** of accommodation is the dioptric distance between the far point and the near point of accommodation.

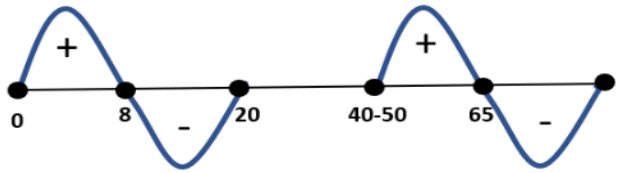
The development of ametropia

- In emmetropia – parallel rays of light are focused upon the retina
- In hyperopia – the eye is relatively too short
- In myopia – the eye is too long



The development of refractive errors

- 2 phases of hyperopia, 2 phases of myopia – look at the chart



- in the newborn – hyperopic around + 2,0 D
- increase in axial length according to Sorsby – 2 phases:

1. infantile (up to 3 years) – fast phase – the eye grows rapidly in early childhood with an increase in axial length from approximately 18 mm at birth to 23 mm by the age of 3 years
2. juvenile (from 3 age – max. 18 age) – slow phase, the eye grows only 0,1 mm per year

The average axial lenght of the adult eye is approximately 24 mm.

Compensation of axial length prolongation goes toward flattering of cornea and crystalline lens.

Homework

- Occurrence of refractive errors (in your country, in the world…)

Myopia

- Definition
- Optical condition of the myopic eye
- Classification
- Symptoms
- Signs of the myopic eye
- Risk factors for the development of myopia
- Prognosis
- Night myopia
- Correction