# 7.7 Reference Intervals for Sedimentation Rate

Preben Wiggers[1], Jørgen Dalhøj[2], Ole Blaabjerg[3], Per Hyltoft Petersen[3],

1. *Department of Medicine, Haderslev Sygehus, DK-6100 Haderslev, Denmark.*
2. *Department of Cardiology, Odense University Hospital, DK-5000 Odense C, Denmark.*
3. *Department of Clinical Chemistry, Odense University Hospital, DK-5000 Odense C, Denmark.*

The erythrocyte sedimentation rate (ESR) is used to monitor the activity of the acute phase reactants, which are raised due to inflammation or necrosis of tissues. However, in order to implement the ESR it is essential to investigate the variations in a healthy population.

## Materials and Method

4,202 consecutive blood samples from blood donors - 2,346 males and 1,856 females - were investigated using Westergren's method (2) for determination of ESR. The donors gave the blood voluntarily without being payed. The age range was 18 to 65 years; mean 35.9 years for women and 39.3 years for men. 198 donors were investigated twice with an interval of six months. The present results have been published in another form before (1).

## Results

The geometric mean was 4.5 mm/hour for women and 2.5 mm/hour for men. The median value increased with age for both men and women. In Fig. 7.7.1 the 97½ percentile for the ESR-values are shown as function of age.

Intra-individual variation was investigated in 198 subjects using the difference between first and second sampling. The coefficient of correlation was 0.26 for males and 0.58 for females.
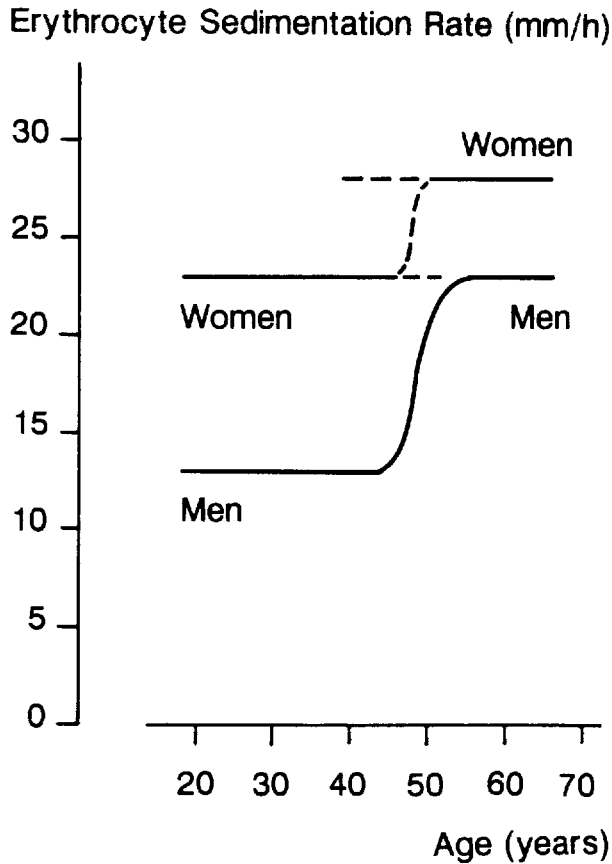
## Erythrocyte Sedimentation Rate (mm/h)



*Fig. 7.7.1*       *97½ percentile for ESR as function of age for healthy men and women.*

### Discussion

The sedimentation rate is often applied as a 'screening test' in order to identify latent diseases, as the expectation is a quantitative connection between the degree of disease and the enhance increase in of the sedimentation rate.

However, before the test can be applied, it is necessary to know the distribution of test results in the actual population in order to determine the validity of the test. Like all other reference intervals a fraction of 'defined healthy' individuals will be excluded due to test results outside the reference interval. By using a one-tailed model - excluding the upper 2½ percentage of individuals the 'discharged' fraction is kept at a low level.

These limits are used as rule-out criteria in the protein investigations (cf. sections 7.2, 7.3 and 7.4).

## References

1.    Dalhøj J, Wiggers P. The erythrocyte sedimentation rate in clinically healthy individuals. *Ugeskr Læger* 1990;152:456-9.

2.    Westergren A. The technique of the red cell sedimentation reaction. *Amer Rev Tuberc* 1926;14: 94-101.