
# Optical instruments

**Lecture 3**

**Contrast sensitivity**

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# Contrast sensitivity

CS it is a measurement of your ability to differentiate between finer and finer increments of light versus dark (contrast). It's a critical part of your visual acuity.

It is a very important measure of visual function, especially in situations of low light, fog or glare, when the contrast between objects and their background often is reduced. Driving at night is an example of an activity that requires good contrast sensitivity for safety.

# Cont.

A healthy contrast sensitivity level lets you enjoy better vision in various aspects, such as having a normal visual field. Your ability to detect motion and determine distance is within normal levels, too.

Your eyes can adapt to poor lit-condition and darkness. You can also easily recognize patterns, symbols and signs.

# Symptoms of Reduced CS

Typically, you'll be unable to pick out objects with similar color to their backgrounds or environment. Common symptoms are include :

- Poor night vision, with multiple issues, including inability to work out distances, read traffic signs and drive safely.
- Difficulty reading a newspaper.
- Eye strain when watching TV.
- Inability to recognize faces or facial features.
- Difficulty seeing steps.
- Inability to spot tripping hazards such as potholes, curbs or rocks

# Treatment of poor CS

Wearing corrective lenses with a yellow filter to improve your ability to discern contrast.

If you need prescription eyeglasses, many people find that they see better in low-light conditions when wearing lenses that include anti-reflective coating, compared with wearing the same prescription lenses without AR coating.

Also, eyeglasses with custom wavefront lenses sometimes can improve contrast sensitivity and night vision.

In some cases, custom or wavefront LASIK

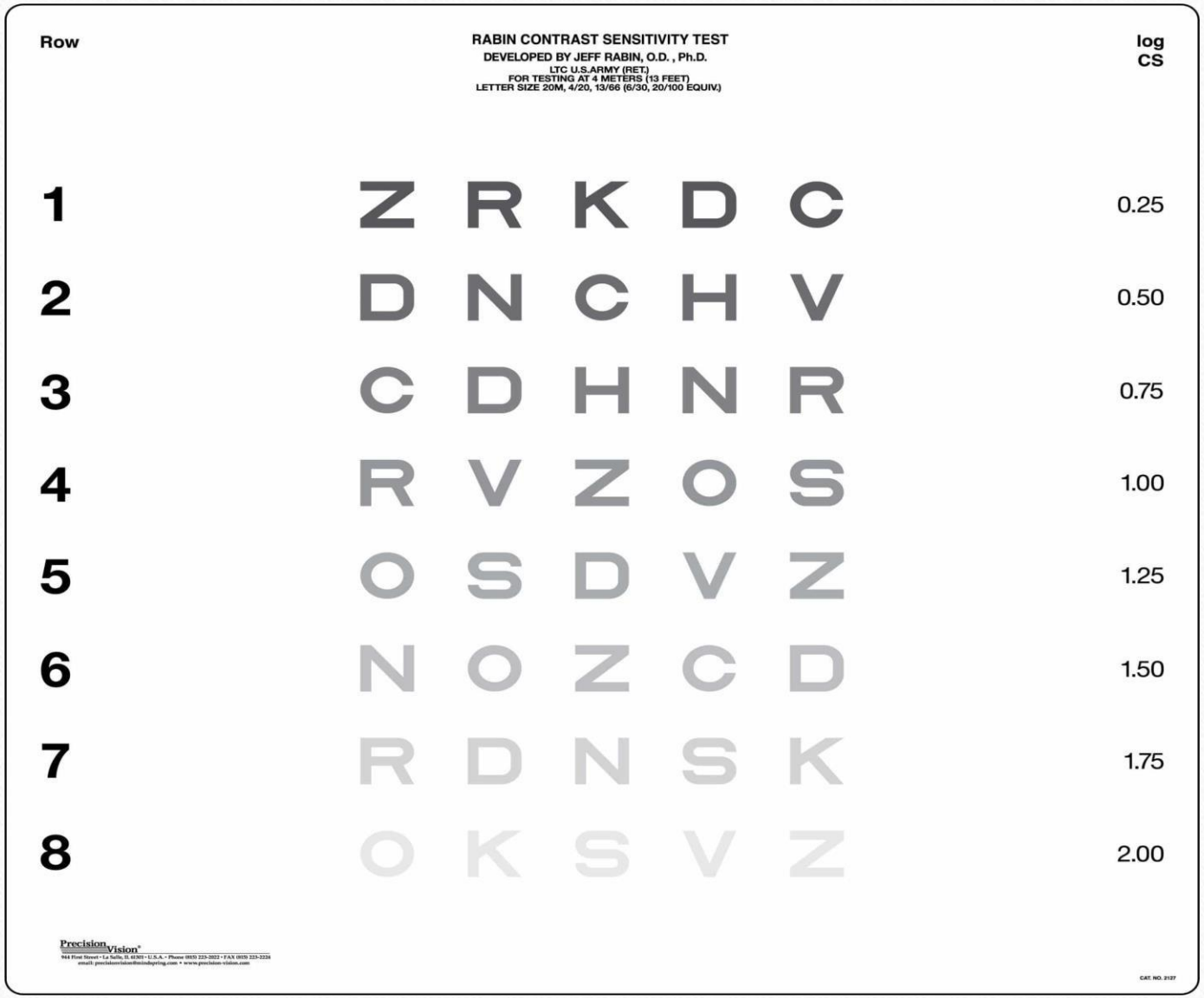
# low contrast sensitivity can be caused by

- ✓ Glaucoma
- ✓ Diabetes
- ✓ Cataract
- ✓ Age

# Pelli-Robson test

Using a single large letter size (20/60 optotype), with contrast varying across groups of letters.

Specifically, the chart uses letters (6 per line), arranged in groups whose contrast varies from high to low.


Row
RABIN CONTRAST SENSITIVITY TEST
DEVELOPED BY JEFF RABIN, O.D. , Ph.D.
LTC U.S.ARMY (RET.)
FOR TESTING AT 4 METERS (13 FEET)
LETTER SIZE 20M, 4/20, 13/66 (6/30, 20/100 EQUIV.)
log CS
1 Z R K D C 0.25
2 D N C H V 0.50
3 C D H N R 0.75
4 R V Z O S 1.00
5 O S D V Z 1.25
6 N O Z C D 1.50
7 R D N S K 1.75
8 O K S V Z 2.00
Precision Vision
CAT. NO. 2127

# How to test

Patients read the letters, starting with the highest contrast, until they are unable to read two or three letters in a single group. Each group has three letters of the same contrast level, so there are three trials per contrast level. The subject is assigned a score based on the contrast of the last group in which two or three letters were correctly read.

# Scoring

- Normal contrast sensitivity is when you have a score of 2.0. It means that you can clearly recognize things that have a similar hue as their backdrop.
- If you score less than 1.5, you have moderate reduction in contrast sensitivity. In that case, you have some level of visual impairment.
- If you score less than 1.0, you have some type of visual disability.