EFFECT OF MICROGRAVITY ON VISUAL CONTRAST THRESHOLD DURING STS SHUTTLE MISSIONS

VISUAL FUNCTION TESTER - MODEL 2 (VFT-2)

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PURPOSE (VFT-2)

- Previous contrast threshold studies, both U.S. and Soviet, at different test distances and may be affected by age, lighting, and method of target presentation.

- Determine effect of microgravity on distance visual contrast threshold over mission duration.

- Use variable contrast adjustment device under controlled lighting condition to obtain more precise threshold measurement.

- Test at multiple spatial frequencies and with additional target types to more completely evaluate.
VISUAL HETINA LGN CORTEX

NORMAL VISION
UNIFYING METRICS

ABNORMAL VISION
VISUAL STANDARDS

THRESHOLD AND SUPRATHRESHOLD
IMPROVED VISION

TARGET ACQUISITION AND IMAGE PROCESSING

CONTRAST SENSITIVITY

VISUAL CHANNELS

SPATIAL FREQUENCY

ORIGINAL CONTRAST BASIC FORM IDENTIFICATION DETAILS: TEXTURE + EDGES

ORIGINAL = CONTRAST + BASIC FORM + CLASSIFICATION + IDENTIFICATION + DETAILS: TEXTURE + EDGES

HE: 79-3-2
METHODS (VFT-2)

SUBJECTS

- 5 Flights, 12 STS Astronauts
  - 3 subjects with no post flight data
  - 1 uncorrected (no glasses)
  - 1 SCL, 1 Toric-SCL

APPARATUS

- Visual Function Tester - Model 2 (VFT-2)
  - Small, hand-held, battery powered
  - Three target types:
    - Square-wave gratings (detection task)
    - Disks (detection task)
    - Tribars (orientation task)

PROCEDURE

- SAME AS VFT-1
RESULTS

VISUAL CONTRAST THRESHOLD

- Insufficient number of subjects for report at this time

- VFT-2 manifested on STS-53 (2 astronauts) scheduled to fly Dec 92

- Preliminary reporting of visual psychophysical study may affect subsequent data and should be avoided