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Teletransmitted stereoscopic video images in oculoplastic surgery

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**Purpose**
To establish an easy and inexpensive system to record stereoscopic images in video, its stereo visualization and publishing on an internet platform for collaborative research or remote surgery supervision.

**Methods**
For stereoscopic video recording a NuView (© Display Systems, USA) adapter was attached to a mini-DV camcorder Panasonic NV-D5500 (Panasonic corp., Japan). Eight patients having oculoplastic surgery (ie. basaloid excision) were recorded by means of this system. Visualisation of stereoscopic video images was performed using a CRT monitor or TV set that display left/right images time-sequentially. The TV set was connected with a TV adapter P/N10382 which controls wired LCD-shutter glasses P/N103624 (EDD Inc.).

**Results**
Finder free stereoscopic video visualization was achieved with this system permitting excellent spatial orientation related to surgical instruments, recognition surgeon's hand movements etc.

**Conclusion**
The use of stereoscopic video technology bears a great potential to enhance the comprehension in oculoplastic surgery and may improve in the future telemedical assistance in this type of surgery. The use of stereoscopic video images will be developed for research and educational purposes, especially using internet as a communication medium.

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Accommodative convergence measurement in strabismus using an oculomotor register system by infrared

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**Purpose**
To develop a new measuring technique of accommodative convergence (AC) in patients with strabismus that calculates deviation of each eye related to accommodation.

**Methods**
One-student of psychology; female, 24 years old with right exotropia (22.25°) and normal visual acuity (VA right eye -VA left eye- 1.2). An infrared oculomotor register system (Eye Track) was used. Horizontal and vertical gaze position (X/Y) on the display screen, fully compensated for head position, was obtained. Individual held up fixation on a dot of screen for a minute. Five sessions were carried out for each experimental condition. In each session 15000 measurements of each eye horizontal and vertical gaze position were obtained (Xeye: Yeye). Independent variables were a) Binocular/or monocular conditions, b) Eye (right; left), and c) Accommodation: 0°/ +0.00D/ -2.00D/ -0.00D/ 0.00D/ +1.00D/ +2.00D/ +3.00D/varied with soft contact lenses, radius=8.99mm, diameter=13.8mm). Dependent variables were Xeye and Yeye.

**Results**
Regression lines X vs. Y; n=100; X, Y were calculated in terms of accommodation. Null and alternative hypotheses (H0: b=0; H1: b≠0; b line regression slope) were tested using Student's Test. Only right eye changed its horizontal position, in binocular position, when accommodation was varied (X; r=5.90; p=0.25; t=4.66; p<0.006). No significant variations were found for other conditions.

**Conclusion**
This technique allows compute, with very high accuracy, contribution of each eye to AC in patients with strabismus.

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The ACA ratio in University Students in Portugal

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**Purpose**
To examine how the response ACA/A ratio varies as a function of refractive error, age and sex.

**Methods**
The refractive error was measured by the standard subjective refraction and all refractive errors were corrected. The ACA ratio were measured by the gradient method in the phoroptor. The refraction error is the base, ranged from −8.75 to +3.75 D mean spherical equivalent +0.20 ± 1.53D (Mean ± SD). The maximum amount of astigmatism was −2.25 D.

**Results**
The mean value for the population was 4.3 ± 2.13 D/D (mean ± SD). Statistically there are no significant differences between male and female (male ACA ratio = 4.3 ± 2.10 D/D; female ACA ratio = 4.3 ± 2.16 D/D) or any significant differences between the age groups (less than 20 years old ACA ratio = 4.5 ± 2.29 D/D; between 20 and 25 years-old ACA ratio = 4.3 ± 2.00 D/D; more than 25 years old ACA ratio = 4.2 ± 2.38 D/D) or any significant differences between myopes, hyperopes and emmetropes, (myopes ACA ratio = 4.6 ± 2.15 D; hyperopes ACA ratio = 4.4 ± 2.53 D and emmetropes ACA ratio = 4.0 ± 1.77 D).

**Conclusion**
The results show an ACA/A ratio similar to results obtained in other populations. An elevated response ACA/A ratio were present in the myopic group but the difference was not statistically significant.

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The Frisy-Davis 2 (FD2) distance stereotest in evaluation of exotropia

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**Purpose**
We have recently developed a presentation protocol for the new Frisy-Davis 2 distance stereotest (ARVO 04), which allows measurement of distance stereoaucuity free from monocular cues. Tests of distance stereoaucuity may be useful in evaluating strabismus when the angle of deviation, or control of that deviation, differs at distance and near fixation. We therefore conducted a pilot study to evaluate the Frisy-Davis 2 in patients with exotropia.

**Methods**
Twelve patients with exotropia were tested with the FD2 distance stereotest, using our new presentation protocol which incorporates a monocular phase to determine whether initial binocular thresholds represent true stereoaucuity. Stereoaucuity at near was also tested with the preschool Randot and Frisy tests. Angles of distance exotropia ranged from 18 to 80 PD. The control of the distance deviation ranged from constant tropia to very intermittent (control score 0 to 5, on a scale of 0 to 5, where 5 is always phoria and 5 is always tropia).

**Results**
None of the 7 patients with constant exotropia had measurable distance stereoaucuity using the FD2. In contrast, all 5 patients with intermittent exotropia had measurable distance stereoaucuity, ranging from 30 to 60 sec (the finest disparity on the FD2 test at 3 m) to 160 sec (p<0.001, Fisher's exact test). Near stereoaucuity was 40-60 sec in all intermittent cases, whereas patients with constant exotropia had no near stereoaucuity.

**Conclusion**
Patients with intermittent exotropia have a wide range of distance stereoaucuity thresholds using the FD2, in contrast to more uniform near stereoaucuity. Constant exotropia was associated with no measurable stereoaucuity. The new FD2 distance stereotest may be useful for monitoring deterioration of intermittent exotropia.