

A traffic perimetry test that adheres to the European visual field requirements for group 2 drivers

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Editor, current European visual requirements for driving are based on a report by the Eyesight Working Group and place particular emphasis on limits for visual acuity and visual field (Commission directive 2009/113/EC; Eyesight Working Group 2005). Still, the lack of a uniform traffic perimetry algorithm leads to differing practices in enforcing visual field regulations and challenges the right of drivers for legal equality. In a recent publication in this journal, we introduced a binocular supra-threshold test that adheres to the visual field requirements for group 1 (car/motorcycle) driving licenses (Jørstad et al. 2020). As we will explain, the same principles can be used to establish a group 2 test (bus/lorry).

For holders of group 2 driving licenses, the binocular visual field is required to be at least 160° horizontally, at least 70° left and right, and 30° up and down, and no defects should be present within a radius of the central 30°. If the left or right visual field is limited to 70°, the opposite side must extend to 90° to fulfil the 160° requirement. Consequently, the group 2 test pattern must cover a rectangular visual field of 180° x 60°, but only the better of the two performances outside 70° should be decisive. A Goldmann III stimulus size and 500 ms stimulus duration would be consistent with our group 1 test. The Eyesight Working Group suggests a stimulus luminance of 8 dB above the threshold for 70-year-olds, which is slightly more restrictive than the 80-year-old age reference for group 1. Still, the suprathreshold stimuli are quite bright, and most people should be able to do the test without glasses. In cases where glasses must be worn in order to see the stimuli, the test should be repeated without glasses if peripheral stimuli are missed because of lens rim artefact.

The group 2 test must cover an even larger visual field than group 1, and it is necessary to carefully balance the number of test points needed for sufficient sensitivity, acceptable test duration, and to mitigate the risk of fatigue. Equidistant test points of 6.5° centrally (similar to our group 1 test) and 10.0° peripherally fit well within a 180° x 60° rectangle and constitute a total of 85 central and 100 peripheral test points (Figure 1A), which

amounts to 50% more test points than for our group 1 test. Alternatively, the test point distance can be further increased to 12° outside 70°, which reduces the number of peripheral test points to 84 but inevitably lowers the sensitivity for far peripheral field defects at the same time (Figure 1B).

Some ambiguity can be found in the Eyesight Working Group's view on a positive perimetry result for group 2, i.e. a visual field inappropriate for driving. A similar approach as was taken for our group 1 test would suggest at least three adjacent missed test points within 30° (a scotoma exceeding the physiological blind spot) or more than seven percent of test points missed within the whole 160° x 60° visual field (≥ 13 for pattern A and ≥ 12 for pattern B: Figure 1) could define a positive result. However, while the European visual requirements allow monocular individuals to drive a car or motorcycle, they are currently prohibited from holding a group 2 driving license. Accordingly, the Eyesight Working Group states that not even a physiological blind spot should be present [in the binocular visual field of a bus or lorry driver]. This implies a stricter interpretation of central findings for the group 2 test (e.g. only a few scattered test points missed within 30°), but a precise definition of a positive test result is open to debate.

In conclusion, it is possible to create a binocular supra-threshold test that adheres to the European visual field requirements for group 2 driving licenses. We present two feasible alternatives and call for consensus about the preferred pattern and definition of positive test results.

Competing interests

FR has research perimeters from Haag-Streit AG and Zeiss Meditec and is a consultant to Haag-Streit AG. SZ is an employee of Haag-Streit AG. TEJ and ØKJ declare that they have no conflict of interest.

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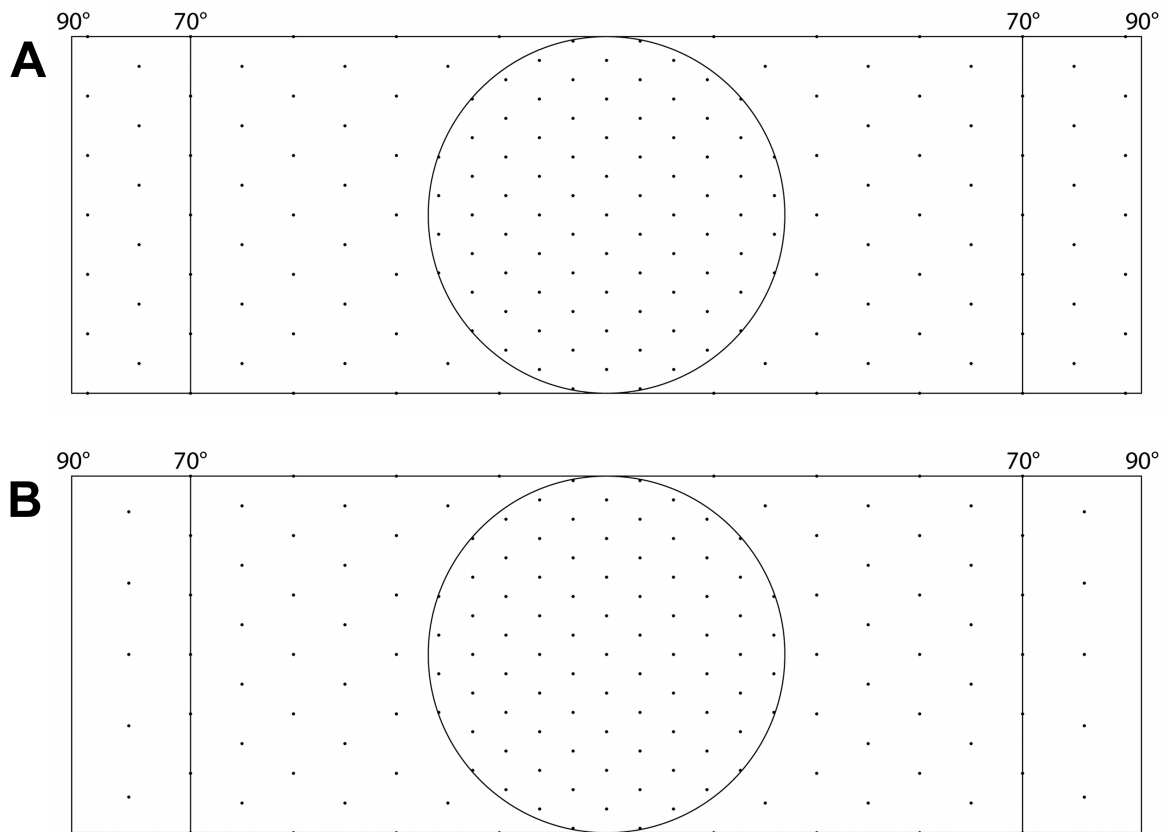


Figure 1. Two suggestions for a group 2 test pattern

Pattern A consists of 85 central and 100 peripheral points. The test points lie at equal distances of 6.5° centrally and 10° peripherally. Pattern B has the same 85 central test points. The peripheral test points, however, only lie at equal distances of 10° out to 70° . Outside 70° the distance is further increased to 12° , which reduces the number of peripheral test points to 84. For both patterns only the better of the two performances outside 70° should be counted.