

**Title:**

Planning the individual refractive correction for cataract patients based on objectively measured refraction profile

**Authors:**

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**Purpose:**

To demonstrate the feasibility of planning the postoperative refractive target of cataract patients by objectively measured refraction profiles of individuals using the Visual Behavior Monitor.

**Setting:**

Healthy volunteers have been enrolled for testing. Measurements were performed in home care settings after training and a familiarisation session. Volunteers performed measurements during their normal daily routine (e.g. in the office, at home and while commuting).

**Methods:**

The VBM prototype is mounted on user's prescription or plano glasses. The device is equipped with optical sensors for monitoring the refractive needs in the direction of the user's gaze. Users are asked to report activities using the companion smartphone app.

The resulting refractive profiles were statistically analysed and compared with the available defocus-curves of commercially available intra-ocular lenses (monofocal, aspherical, multifocal). The comparison between the refractive needs measured by VBM and the defocus-curves of the IOL are discussed in relation to the expected spectacle independence of the patient.

**Results:**

Subject's individual refractive profiles were found to match to different defocus-curves to allow maximum probability of spectacle independence. Refractive profiles can vary significantly from patient to patient. This variability leads to different match criteria between the patient refractive profile needs and the available IOL's.

**Conclusions:**

VBM has the potential to help surgeons and patients to select individual refractive solutions for cataract surgery based on an objective evaluation of their refractive needs and individual behaviours and the defocus-curves of intra-ocular lenses.