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Vision Rehabilitation by Electrical Retinal Stimulation: Review of Microelectrode Approaches

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Vision rehabilitation in the blind seems to be the ultimate goal of ophthalmologic treatments. Among the several different approaches, electrical retinal stimulation showed the most promising results for restoring vision. Microelectrode arrays based on a flexible polymer developed and used for pattern electrical retinal stimulation, and epiretinal, subretinal and suprachoroidal approaches are adopted for the surgical implantation of electrodes. Stimulation patterns can be provided from an external stimulator through wireless signal transfer or can be given by implanted photodiode arrays with an external power supply. *In vitro* and *in vivo* studies revealed that the retinal implant can be used for clinical purposes, and clinical trials showed that blind volunteers who were subjected to retinal implant surgery could recognize various shapes and their surroundings.

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