Indirect Ophthalmoscope Simulator

eyesi
by VRmagic
Eyesi Indirect Ophthalmoscope Simulator

Eyesi Indirect is a training simulator for binocular indirect ophthalmoscopy. The simulator provides a life-like learning environment in which students can train retinal examinations independently of the patient flow. With a comprehensive database of clinically relevant pathologies, Eyesi Indirect significantly extends the range of diagnostic training available to medical students today.

Hands-On Training of Examination Skills

The Eyesi simulator consists of a head-mounted display, a model head and two diagnostic lenses and is operated exactly like a real ophthalmoscope. A touch screen is used for system control. The integrated augmented reality technology provides a highly realistic, three-dimensional experience of retinal examinations.

Detailed Assessment

At the end of each virtual retinal examination, the trainee is presented with a performance summary. Eyesi Indirect provides detailed and objective evaluation of technical and diagnostic skills. The computer-based training system even tracks improvements over time by storing performance data relating to efficiency, completeness and accuracy. All performance data is stored in a database for further analysis by the educator.

Case-Based Learning

Using a case-based didactic approach, Eyesi Indirect effectively prepares trainees for clinical practice. Students can examine a wide range of relevant retina and vitreous pathologies before they meet their first real patient. Case descriptions and the clinical records of the virtual patient are also provided by the training system. The case database of Eyesi Indirect is being constantly extended.
Examination Training

Examination Skills

With Eyesi Indirect, students learn how to properly handle and operate an indirect ophthalmoscope for retinal examinations. In order to render fundus images, the diagnostic lens and the light source of the simulator have to be exactly aligned in front of the model eye. Trainees learn how to cope with inverted images and how to move the diagnostic lens correctly. Lenses with different magnification powers and focal distances are available in the simulation. Ophthalmoscope settings such as brightness and diameter of the light cone can also be adjusted to achieve an optimal view of the retina.

Abstract Scenarios

To allow training of the examination skills essential for indirect ophthalmoscopy, Eyesi Indirect offers abstract scenarios in which colored geometric shapes are placed on the retina. Trainees have to find these abstract objects and mark their location, orientation and size in a fundus editor. The level of difficulty rises as objects have to be found on the periphery of the retina.

Evaluation and Guidance

During the virtual examination, a light map in the head-mounted display informs trainees about which part of the retina is currently visible through the ophthalmoscope lens and which parts still need to be examined. Educators can track the progression on the simulator’s monitor. At the end of the examination procedure, Eyesi Indirect provides a detailed performance evaluation. Scored parameters include the examined retinal area, the accuracy of the fundus scheme and the amount of light exposure.

Anatomical Structures

The Anatomical Structures courses of Eyesi Indirect offer a variety of healthy retinas from patients of different ages and ethnicity. In structure search mode, trainees are asked to find anatomical structures such as the macula or vascular arcades. Educational guidance is provided by the training system by indication of essential structures when they are in view. In more advanced levels, trainees have to examine healthy retinas and specify their characteristics without educational guidance.
Medical Training

Typical Retina and Vitreous Pathologies

The cases provided in the Basic Findings and Diagnoses tier of Eyesi Indirect represent the first step in learning how to diagnose disease patterns. Trainees learn to specify typical retina and vitreous pathologies such as AMD, diabetes and glaucoma. Educational guidance is provided through multiple-choice questions. Medical background information helps trainees to identify the typical findings for the given pathology as seen through the ophthalmoscope.

Findings and Diagnoses

Each pathology package comes with a findings and classification scheme specific to the given topic. A multiple-choice tool allows trainees to describe their diagnostic findings in detail. All diagnosis specifications made by the trainee are evaluated by the system for immediate feedback.

Clinical Cases

The clinical cases of Eyesi Indirect are modeled on the basis of real clinical cases and help trainees to develop clinical skills such as making diagnoses and therapeutic decisions. Available pathologies range from macular degenerations and hereditary and diabetic disorders through to tumors in the chorioretinal complex. Clinical cases may have complicated pathologies that need to be differentiated against multiple possible diagnoses.

Educational Guidance

The training system provides medical background information to guide trainees in the process of evolving a diagnosis. The findings and diagnosis screens of the clinical case modules feature a large number of multiple-choice questions and extensive educational add-on information and commentaries. Information on the virtual patient includes patient history, referral causes, additional case-relevant information such as OCT and angiography as well as differential diagnoses.
For more information on the Eyesi Indirect Ophthalmoscope Simulator or the Eyesi Surgical Simulator, please contact:

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