

Claims

- [Claim 1] A system for treating myopia, comprising:
a digital apparatus configured to execute a digital application for treating myopia in a subject;
a healthcare provider portal configured to provide one or more options to a healthcare provider to perform one or more tasks to prescribe treatment for the myopia in the subject based on information received from the digital application; and
an administrative portal configured to provide one or more options to an administrator of the system to perform one or more tasks to manage access to the system by the healthcare provider.
- [Claim 2] The system of claims 1, wherein the digital application for treating myopia instructs a processor of the digital apparatus to execute operations comprising:
generating digital therapeutic modules for treating myopia based on a mechanism of action in and a therapeutic hypothesis for the myopia.
- [Claim 3] The system of claim 2, wherein the generating of the digital therapeutic modules comprises generating the digital therapeutic modules based on neurohumoral factors related to the myopia onset.
- [Claim 4] The system of claim 2, wherein the operations further comprise generating a calibration module for calibrating one or more of an accuracy of measurement of the subject's eye position, and a light environment.
- [Claim 5] The system of claim 4, wherein the calibration module is generated prior to generating the digital therapeutic modules.
- [Claim 6] The system of claim 4, wherein the accuracy of measurement of the subject's eye position is calibrated, and said calibrating the accuracy of measurement of the subject's eye position comprises one or more of instructing the subject to position their face to appear on a screen of the digital apparatus, detecting the subject's eyes for a given period of time, instructing the subject to blink their eyes, detecting if the subject blinked their eyes, instructing the subject to stare at the screen, instructing the subject to move their eyes in a given direction or rotate their eyes, and determining a threshold for detecting the subject's eyes.
- [Claim 7] The system of claim 6, wherein the digital apparatus comprises one or more sensors for tracking movement of the subject's eyeball.
- [Claim 8] The system of claim 4, wherein the accuracy of measurement of the

- light environment is calibrated, and said calibrating the light environment comprises one or more of detecting light in the subject's environment using a light sensor of the digital apparatus, and instructing the subject to turn on one or more lights in their environment.
- [Claim 9] The system of claim 1, wherein the digital application for treating myopia instructs a processor of the digital apparatus to execute operations comprising:
generating digital therapeutic modules for treating myopia based on a mechanism of action in and a therapeutic hypothesis for the myopia;
generating digital instructions based on the digital therapeutic modules;
providing the digital instruction to a subject; and
collecting the subject's execution outcomes of the digital instructions.
- [Claim 10] The system of claim 9, wherein the generating of the digital instructions and the collecting of the subject's execution outcomes of the digital instructions are repeatedly executed several with multiple feedback loops, and the generating of the digital instructions comprises generating the subject's digital instructions for this cycle based on the subject's digital instructions in the previous cycle and the collected execution outcome data on the subject's digital instructions provided in the previous cycle.
- [Claim 11] The system of claim 1, wherein the generating of the digital therapeutic modules comprises generating the digital therapeutic modules by applying imaginary parameters about the subject's environments, behaviors, emotions, and cognition to the mechanism of action in and the therapeutic hypothesis for the myopia.
- [Claim 12] The system of claim 1, wherein the digital application for treating myopia instructs a processor of the digital apparatus to generate digital therapeutic modules comprising two or more modules selected from the group consisting of an eye exercise module, a relaxation module, and a light therapy module.
- [Claim 13] The system of claim 12, wherein the eye exercise module comprises one or more exercise instructions for one or more of: eyeball exercise instructions, biofeedback control instructions, and eyeball*?*related behavior control instructions;
the relaxation module comprises one or more relaxation instructions for one or more of: physical exercise instructions, ego enhancement instructions, safety feeling instructions, comfort feeling instructions, and fun instructions; and

- the light therapy module comprises one or more light therapy instructions for controlling a light environment of the subject.
- [Claim 14] The system of claim 13, wherein the one or more relaxation instructions comprise one or more of playing a sound or song, inducing blinking, and instructing the subject to perform gymnastics.
- [Claim 15] The system of claim 12, wherein the digital therapeutic modules further comprise an accomplishment module comprising one or more accomplishment instructions for task accomplishment and for providing compensation for the subject's adherence to the instructions of the two or more first modules.
- [Claim 16] The system of claim 12, wherein the digital therapeutic modules further comprise a fun module comprising one or more fun instructions for music, games, or videos.
- [Claim 17] The system of claim 1, wherein the one or more options provided to the healthcare provider are selected from the group consisting of adding or removing the subject, viewing or editing personal information for the subject, viewing adherence information for the subject, viewing a result of the subject for one or more at least partially completed digital therapeutic modules, prescribing one or more digital therapeutic modules to the subject, altering a prescription for one or more digital therapeutic modules, and communicating with the subject.
- [Claim 18] The system of claim 17, wherein the one or more options comprise the viewing or editing personal information for the subject, and the personal information comprises one or more selected from the group consisting of an identification number for the subject, a name of the subject, a date of birth of the subject, an email of the subject, an email of the guardian of the subject, a contact phone number for the subject, a prescription for the subject, and one or more notes made by the healthcare provider about the subject.
- [Claim 19] The system of claim 18, wherein the personal information comprises the prescription for the subject, and the prescription for the subject comprises one or more selected from the group consisting of a prescription identification number, a prescription type, a start date, a duration, a completion date, a number of scheduled or prescribed digital therapeutic modules to be performed by the subject, and a number of scheduled or prescribed digital therapeutic modules to be performed by the subject per day.
- [Claim 20] The system of claim 17, wherein the one or more options comprise the

- viewing the adherence information, and the adherence information of the subject comprises one or more of a number of scheduled or prescribed digital therapeutic modules completed by the subject, and a calendar identifying one or more days on which the subject completed, partially completed, or did not complete one or more scheduled or prescribed digital therapeutic modules.
- [Claim 21] The system of claim 17, wherein the one or more options comprise the viewing the result of the subject, and the result of the subject for one or more at least partially completed digital therapeutic modules comprises one or more selected from the group consisting of a time at which the subject started a scheduled or prescribed digital therapeutic module, a time at which the subject ended a scheduled or prescribed digital therapeutic module, an indicator of whether the scheduled or prescribed digital therapeutic module was fully or partially completed, and an exercise intensity (EI).
- [Claim 22] The system of claim 1, wherein the one or more options provided to the administrator of the system are selected from the group consisting of adding or removing the healthcare provider, viewing or editing personal information for the healthcare provider, viewing or editing deidentified information of the subject, viewing adherence information for the subject, viewing a result of the subject for one or more at least partially completed digital therapeutic modules, and communicating with the healthcare provider.
- [Claim 23] The system of claim 1, wherein the subject is a child.
- [Claim 24] The system of claim 1, wherein the subject is assisted or supervised by an adult.
- [Claim 25] The system of claim 1, wherein the digital apparatus comprises:
a digital instruction generation unit configured to generate digital therapeutic modules for treating myopia based on a mechanism of action (MOA) in and a therapeutic hypothesis for the myopia, generate digital instructions based on the digital therapeutic modules, and provide the digital instructions to the subject; and
an outcome collection unit configured to collect the subject's execution outcomes of the digital instructions.
- [Claim 26] The system of claim 25, wherein the digital instruction generation unit generates the digital therapeutic modules based on neurohumoral factors related to the myopia onset.
- [Claim 27] The system of claim 26, wherein the neurohumoral factors comprise

- insulin-like growth factor (IGF), cortisol, and dopamine.
- [Claim 28] A method of treating myopia in a subject in need thereof, the method comprising:
- providing, by a digital apparatus to the subject, a digital application comprising modules for treating myopia based on a mechanism of action in and a therapeutic hypothesis for the myopia, each of the modules comprising one or more first instructions for the subject to follow,
- wherein the digital apparatus (i) comprises a sensor sensing adherence by the subject to the one or more first instructions of the modules, (ii) transmits adherence information, based on the adherence, to a server accessible by a healthcare provider through a healthcare provider portal, and (iii) receives one or more second instructions from the healthcare provider based on the adherence information.
- [Claim 29] A non-transitory computer readable medium having stored thereon software instructions for treating myopia in a subject in need thereof that, when executed by a processor, cause the processor to:
- display, by an digital apparatus to the subject, modules for treating myopia based on a mechanism of action in and a therapeutic hypothesis for the myopia, each of the modules comprising one or more in-structions for the subject to follow;
- sense, by a sensor in the digital apparatus, adherence by the subject to the instructions of the modules;
- transmit, by the digital apparatus, adherence information, based on the adherence, to a server accessible by a healthcare provider through a healthcare provider portal; and
- receive, from the server, one or more second instructions from the healthcare provider.