Automated Laser Stimulation Using Biofeedback On Biometric Measures

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BRIEF DESCRIPTION

Photonic physiological and neurological stimulation is the application of therapeutic lasers to classical acupuncture points on the body for therapeutic purposes. Working together, inventors at UCI and Samueli Institute have developed a photonic stimulation system which employs biometric data to automatically modify or control a therapy protocol that is being applied by an electronically positioned laser.

FULL DESCRIPTION

Classical acupuncture involves inserting fine gauge needles into the body at selected sites. The stimulation of specific acupuncture points has indirect effects in other areas of the body that can be used as treatment for pain, nausea, and stress. However, classical acupuncture is inaccessible to many who dislike needles, including children. There are also inherent drawbacks such as soreness, bleeding, and infection that can result from the invasive nature of the needles.

Lasers have been shown to produce physiological and neurological affects similar to classical needle acupuncture. The lasers are typically range from ultraviolet (~390nm) to near-infrared (`900nm) in wavelength. Other parameters, such as penetration angle and power density are can be adjusted to achieve the correct skin penetration depth.

The inventors have developed a method for integrating live biometric data into the control of multiple light sources for laser stimulation therapy. The parameters, such as positioning and intensity, of the lasers are subject to feedback from measured neurological and physiological feedback in real time. The biometric data can come from a variety of sources including but not limited to: heart rate variability (HRV), blood pressure, pupil dilation, electroencephalogram, and muscle tension. The program can measure the effectiveness of the treatment and adjust the laser parameters to the needs of individual patients. The result is a dynamic treatment method that can be personalized for effectiveness during a single treatment protocol or over the course of multiple treatments.

ADVANTAGES

§ Biofeedback improves effectiveness of treatment in real time

§ Feedback can originate from a variety of physiological and neurological diagnostics

STATE OF DEVELOPMENT

-A design has been created

-Note: Another case 2015-330 by the same inventors uses this concept.

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OTHER INFORMATION

CATEGORIZED AS

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