the intensity spectrum that corresponds to a respiratory frequency of the patient and a second peak of the intensity spectrum that corresponds to a heart rate of the patient; performing a comparison of a first intensity of the first peak with a second intensity of the second peak; and generating, via the user interface, output indicative of the comparison.

[0006] A second aspect of the disclosure is a method comprising: generating, via the sensor, a signal representing vibrations originating from a blood vessel of a patient; generating an intensity spectrum of the signal that indicates intensities of the vibrations with respect to oscillation frequencies of the vibrations; identifying a first peak of the intensity spectrum that corresponds to a respiratory frequency of the patient and a second peak of the intensity spectrum that corresponds to a heart rate of the patient; performing a comparison of a first intensity of the first peak with a second intensity of the second peak; and generating, via the user interface, output indicative of the comparison.

[0007] A third aspect of the disclosure is a non-transitory computer readable medium storing instructions that, when executed by one or more processors, cause the one or more processors to perform functions comprising: generating, via the sensor, a signal representing vibrations originating from a blood vessel of a patient; generating an intensity spectrum of the signal that indicates intensities of the vibrations with respect to oscillation frequencies of the vibrations; identifying a first peak of the intensity spectrum that corresponds to a respiratory frequency of the patient and a second peak of the intensity spectrum that corresponds to a heart rate of the patient; performing a comparison of a first intensity of the first peak with a second intensity of the second peak; and generating, via the user interface, output indicative of the comparison.

[0008] By the term “about” or “substantially” with reference to amounts or measurement values described herein, it is meant that the recited characteristic, parameter, or value need not be achieved exactly, but that deviations or variations, including for example, tolerances, measurement error, measurement accuracy limitations and other factors known to those of skill in the art, may occur in amounts that do not preclude the effect the characteristic was intended to provide.

[0009] The features, functions, and advantages that have been discussed can be achieved independently in various examples or may be combined in yet other examples further details of which can be seen with reference to the following description and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Figure 1 is a block diagram of a system, according to an example.

CLAIMS

1. A system comprising:

one or more processors;

a user interface;

a sensor; and

a computer readable medium storing instructions that, when executed by the one or more processors, cause the system to perform functions comprising:

generating, via the sensor, a signal representing vibrations originating from a blood vessel of a patient;

generating an intensity spectrum of the signal that indicates intensities of the vibrations with respect to oscillation frequencies of the vibrations;

identifying a first peak of the intensity spectrum that corresponds to a respiratory frequency of the patient and a second peak of the intensity spectrum that corresponds to a heart rate of the patient;

performing a comparison of a first intensity of the first peak with a second intensity of the second peak; and

generating, via the user interface, output indicative of the comparison.

2. A method comprising:

generating, via a sensor, a signal representing vibrations originating from a blood vessel of a patient;

generating an intensity spectrum of the signal that indicates intensities of the vibrations with respect to oscillation frequencies of the vibrations;

identifying a first peak of the intensity spectrum that corresponds to a respiratory frequency of the patient and a second peak of the intensity spectrum that corresponds to a heart rate of the patient;

performing a comparison of a first intensity of the first peak with a second intensity of the second peak; and

generating, via a user interface, output indicative of the comparison.

3. The method of claim 2, further comprising pressing the sensor with a pressure ranging from 10mmHg to 60 mmHg to a wrist, an ankle, an ear canal, an eye, or a neck of the patient while generating the signal.

4. The method of claim 2 or 3, wherein the blood vessel comprises a peripheral vein.

5. The method of any of claims 2-4, wherein generating the intensity spectrum comprises performing a Fast Fourier transform (FFT) upon the signal.

6. The method of any of claims 2-5, wherein identifying the first peak comprises identifying the first peak as being a most intense peak of any peaks within a range of 0.1 Hz to 0.5 Hz by determining that the first peak represents a greatest amount of energy of any peaks within the range of 0.1 Hz to 0.5 Hz.

7. The method of any of claims 2-6, wherein identifying the second peak comprises identifying the second peak as being a most intense peak of any peaks within a range of 0.5 Hz to 3.5 Hz by determining that the second peak represents a greatest amount of energy of any peaks within the range of 0.5 Hz to 3.5 Hz.

8. The method of any of claims 2-7, further comprising receiving an input identifying the second peak, wherein identifying the second peak comprises identifying the second peak based on the input.

9. The method of any of claims 2-8, further comprising determining, based on the comparison, a diffusing capacity of the patient's lung for carbon monoxide (DLCO).

10. The method of any of claims 2-9, further comprising determining based on the comparison, a diffusing capacity of the patient's lung for carbon monoxide divided by an alveolar volume (DLCO/VA).

11. The method of any of claims 2-10, further comprising determining, based on the comparison, an inspiratory reserve volume (IRV) for the patient's lung.

12. The method of any of claims 2-11, further comprising determining, based on the comparison, an inspiratory capacity (IC) for the patient's lung.

13. The method of any of claims 2-12, further comprising determining, based on the comparison, a maximum rate of oxygen consumption (VO_2 max).

14. The method of any of claims 2-13, further comprising determining, based on the comparison, a work of breathing for the patient.

15. The method of any of claims 2-14, further comprising determining, based on the comparison, a pleural pressure for the patient's lung.

16. The method of any of claims 2-15, further comprising commencing, adjusting, or ceasing a treatment for the patient based on the comparison.

17. The method of claim 16, wherein commencing, adjusting, or ceasing the treatment comprises adjusting a dosage, frequency, or duration of an oxygen treatment for the patient.

18. The method of claim 16, wherein commencing, adjusting, or ceasing the treatment comprises commencing, adjusting, or ceasing a continuous positive airway pressure (CPAP) treatment for the patient.

19. The method of any of claims 2-18, wherein generating the signal comprises generating the signal such that the signal represents the vibrations that are generated via retrograde transmission of a negative pressure exerted on a venous system of the patient by inspiratory pressures.

20. A non-transitory computer readable medium storing instructions that, when executed by one or more processors, cause the one or more processors to perform functions comprising:

generating, via a sensor, a signal representing vibrations originating from a blood vessel of a patient;

generating an intensity spectrum of the signal that indicates intensities of the vibrations with respect to oscillation frequencies of the vibrations;

identifying a first peak of the intensity spectrum that corresponds to a respiratory frequency of the patient and a second peak of the intensity spectrum that corresponds to a heart rate of the patient;

performing a comparison of a first intensity of the first peak with a second intensity of the second peak; and

generating, via a user interface, output indicative of the comparison.