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5. The system according to claim 3, wherein said input device is in communication with a polysomnography system.

6. A computer program product stored on a computer readable medium for predicting a cognitive performance level of an individual, the computer program product comprising:

- first program instructions to model a circadian rhythm,
- second program instructions to determine a cognitive level of a person based on the person's sleep/wake data that includes a series of epochs where each equal length epoch is classified as sleep or wake, and
- third program instructions to calculate a predicted cognitive performance for each epoch of data based on said circadian rhythm and said cognitive level.

7. The computer program product according to claim 6, wherein the circadian rhythm has a first sinusoidal curve with a 24 hour period and a second sinusoidal curve with a 12 hour period.

8. A method for providing a cognitive performance level comprising:

- receiving a data series representing at least one wake state and at least one sleep state an actigraph or a polysomnography system,
- selecting a function based on the data series, wherein the function is selected from a group consisting of a wake function, a sleep function, and a sleep inertia function, where
- the wake function is expressed as follows

$$w(t)=C_{t-1}-k_w$$

where k_w is a positive function, the sleep function is expressed as follows

$$s(t)=C_{t-1}+(100-C_{t-1})/k_s$$

where k_s is a time constant, and the sleep inertia function is expressed as follows

$$i(t)=C_{SW}*[0.75+0.025(t-t_{LS})-(0.025(t-t_{LS}))^2]$$

where t_{LS} is time when the last sleep state occurred and C_{SW} is the cognitive level at the last sleep state, determining a cognitive performance capacity using the selected function using a processor, modulating the cognitive performance capacity with a time of day value using a processor, and providing the modulated value.

9. A system comprising:

- at least one input device for receiving sleep/wake data, wherein said sleep/wake data contains a series of epochs where each equal length epoch is classified as sleep or wake,
- a microprocessor including
- means for modeling a circadian rhythm,

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- means for determining a cognitive level of a person based on the person's sleep/wake data, and
- means for calculating a predicted cognitive performance based on said circadian rhythm and said cognitive level, and
- a display to show the predicted cognitive performance.

10. A system comprising: at least one input device for receiving sleep/wake data, a microprocessor including means for modeling a circadian rhythm, wherein the circadian rhythm has a first sinusoidal curve with a 24 hour period and a second sinusoidal curve with a 12 hour period, means for determining a cognitive level of a person based on the person's sleep/wake data, and means for calculating a predicted cognitive performance based on said circadian rhythm and said cognitive level, and a display to show the predicted cognitive performance.

11. A system comprising: at least one input device for receiving sleep/wake data, wherein the person's sleep/wake data includes a series of epochs where each equal length epoch is classified as sleep or wake, a microprocessor including means for modeling a circadian rhythm, means for determining a cognitive level of a person based on the person's sleep/wake data, and means for calculating a predicted cognitive performance based on said circadian rhythm and said cognitive level, said means for calculating the predicted cognitive performance performs the calculation for each epoch of data.

12. The system according to claim 11, further comprising a display to show the predicted cognitive performance.

13. A method comprising: calculating a cognitive level of a person using a processor based on the person's sleep/wake data received from an actigraph or a polysomnography system, retrieving from memory a time of day value for a time of day that the calculated cognitive level is being calculated for, where the time of day value is from a data series of time of days values that together approximate a curve having a first curve component having a 24 hour period and a second curve component having a 12 hour period, calculating a predicted cognitive performance using a processor based on said retrieved time of day value and said cognitive level, and displaying said calculated predicted cognitive performance.

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