



US006740032B2

(12) **United States Patent**
Balkin et al.

(10) **Patent No.:** **US 6,740,032 B2**
(45) **Date of Patent:** ***May 25, 2004**

(54) **METHOD AND SYSTEM FOR PREDICTING HUMAN COGNITIVE PERFORMANCE**

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(60) Provisional application No. 60/273,540, filed on Mar. 7, 2001, provisional application No. 60/122,407, filed on Mar. 2, 1999, and provisional application No. 60/106,419, filed on Oct. 30, 1998.

(51) **Int. Cl.⁷** **H61B 5/06**
(52) **U.S. Cl.** **600/300; 600/544**
(58) **Field of Search** 600/300, 544

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,770,636 A	9/1988	Buschke
4,893,291 A	1/1990	Bick et al.
5,006,985 A	4/1991	Ehret et al.
5,197,489 A	3/1993	Colan
5,230,629 A	7/1993	Buschke
5,259,390 A	11/1993	MacLean
5,304,212 A	4/1994	Czeisler et al.
5,348,370 A	9/1994	Fukuoka
5,433,223 A	7/1995	Moore-Ede et al.

(List continued on next page.)

OTHER PUBLICATIONS

Akerstedt et al., "Subjective and Objective Sleepiness in the Active Individual," International Journal of Neuroscience, 1990, vol. 52, pp. 29-37.

(List continued on next page.)

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(57) **ABSTRACT**

An apparatus and method for predicting cognitive performance of an individual based on factors including preferably sleep history and the time of day. The method facilitates the creation of predicted cognitive performance curves that allow an individual to set his/her sleep times to produce higher levels of cognitive performance. The method also facilitates the reconstruction of past cognitive performance levels based on sleep history.

40 Claims, 12 Drawing Sheets

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **10/377,602**

(22) Filed: **Mar. 4, 2003**

(65) **Prior Publication Data**

US 2003/0163027 A1 Aug. 28, 2003

Related U.S. Application Data

(63) Continuation of application No. 09/844,434, filed on Apr. 30, 2001, now Pat. No. 6,530,884, which is a continuation-in-part of application No. PCT/US99/20092, filed on Sep. 3, 1999.

