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(54) **SYSTEMS AND METHODS FOR DISPLAYING AND INTERACTING WITH DATA FROM AN ACTIVITY MONITORING DEVICE**

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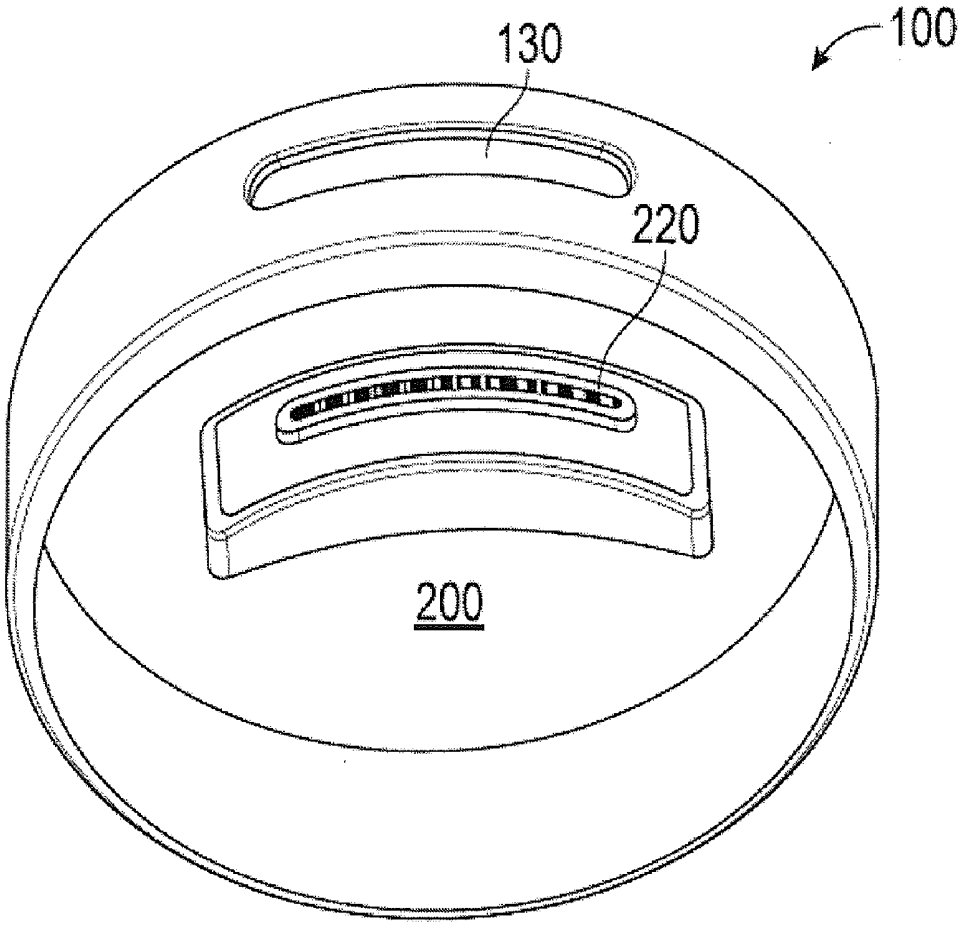
(57) **ABSTRACT**

Methods and systems for displaying and interacting with data from an activity monitoring device are disclosed. In one implementation, a system may include an activity monitoring device including a plurality of biosensors electrically coupled to a circuit board and configured to measure biological information of a user of the activity monitoring device; and a computing device communicatively coupled to the activity monitoring device. The computing device may include a display; one or more processors; and one or more non-transitory computer-readable mediums operatively coupled to at least one of the one or more processors and having instructions stored thereon that, when executed by at least one of the one or more processors, cause: at least one of the one or more processors to process the biological information measured by the activity monitoring device, and the display to display an activity display and a sleep display based on the processed biological information.



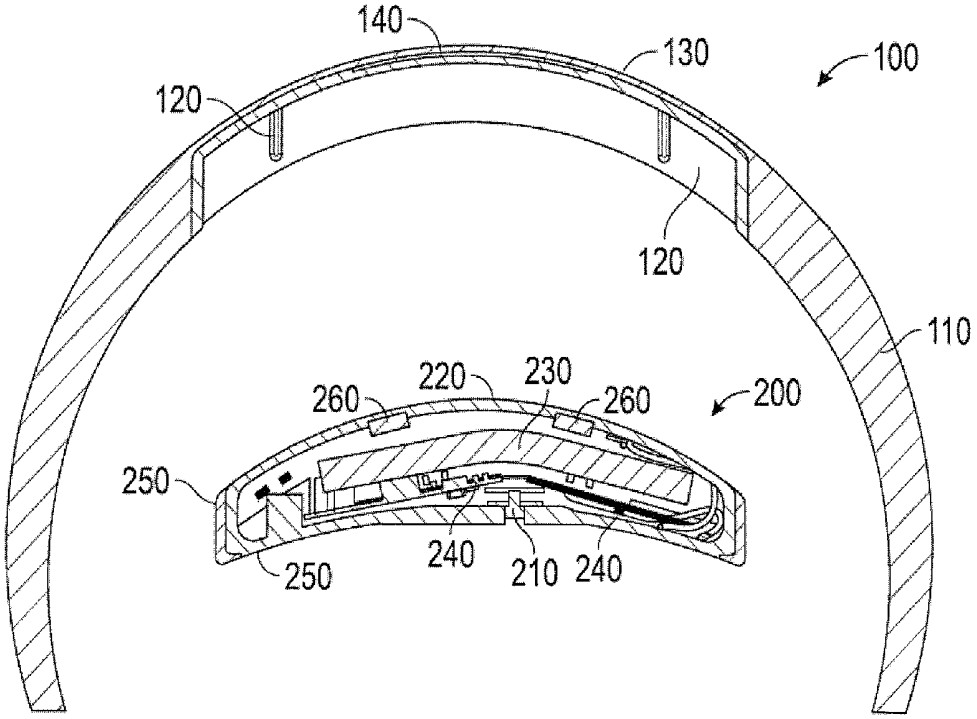

140
130
100
120
120
110
220
230
260
260
200
250
240
210
240
250

FIG. 1

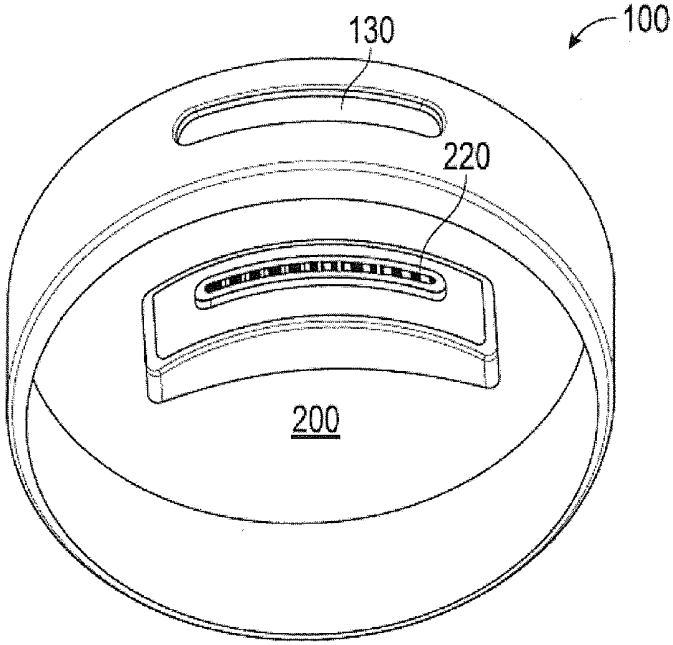

130
100
220
200

FIG. 2

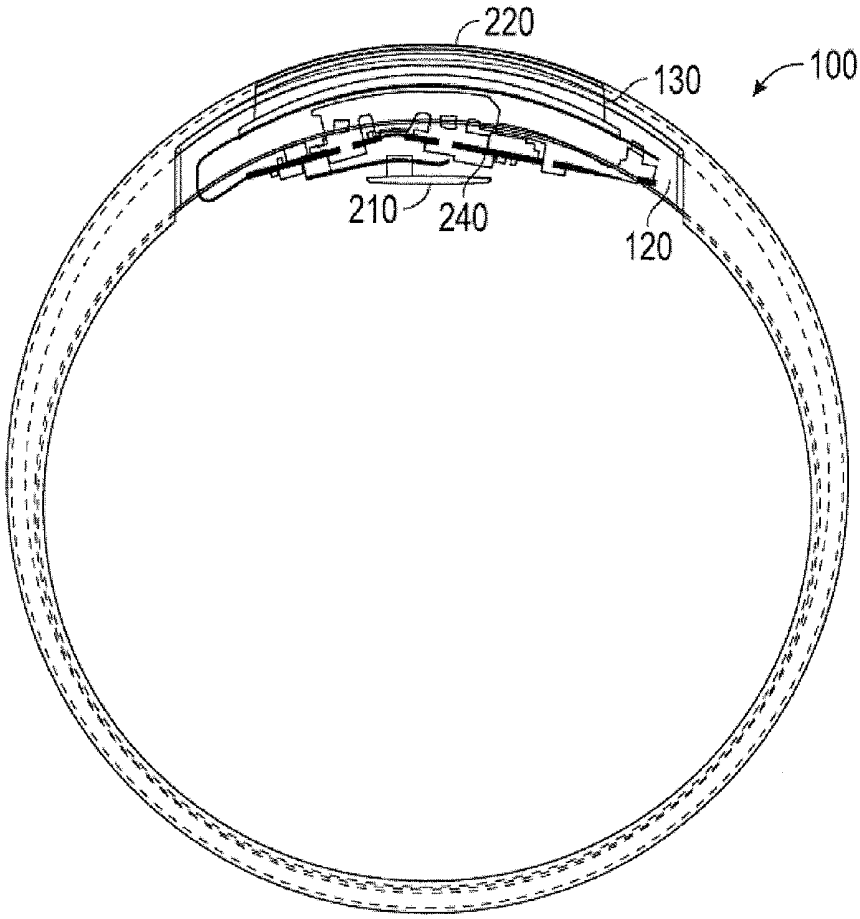


FIG. 3

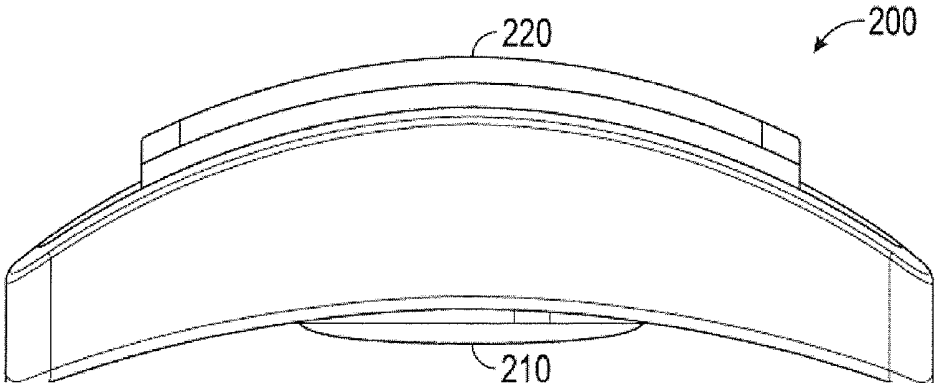


FIG. 4

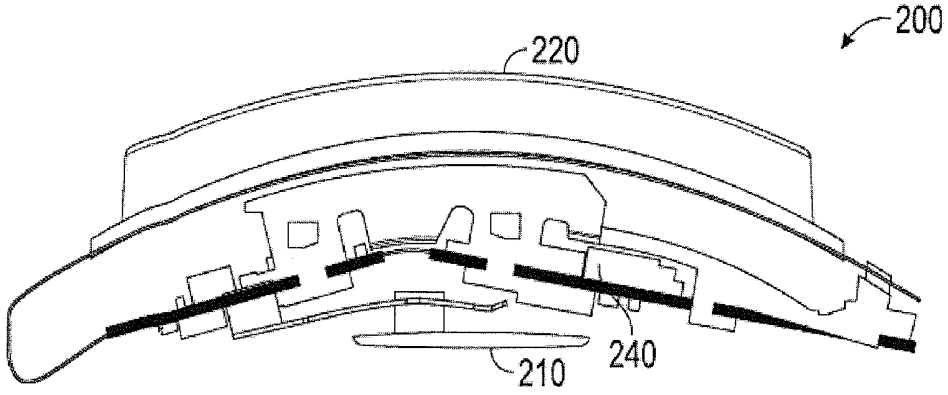


FIG. 5

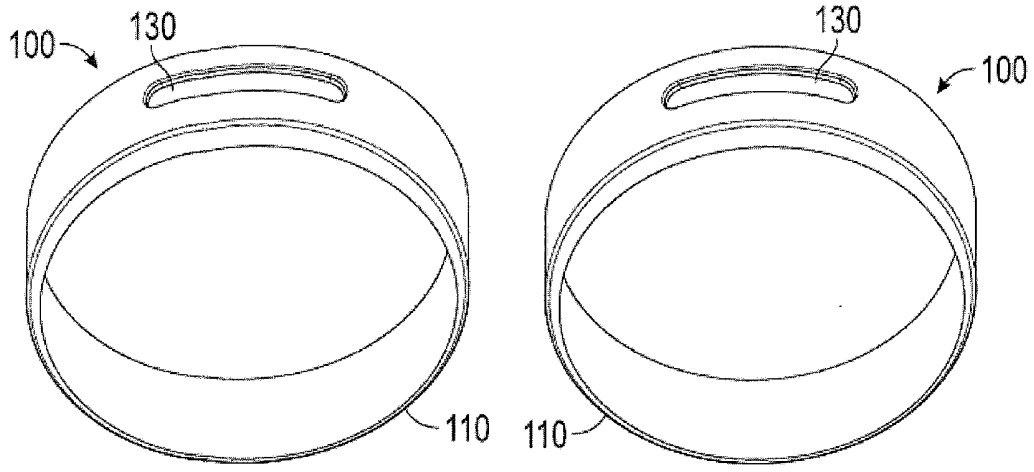


FIG. 6

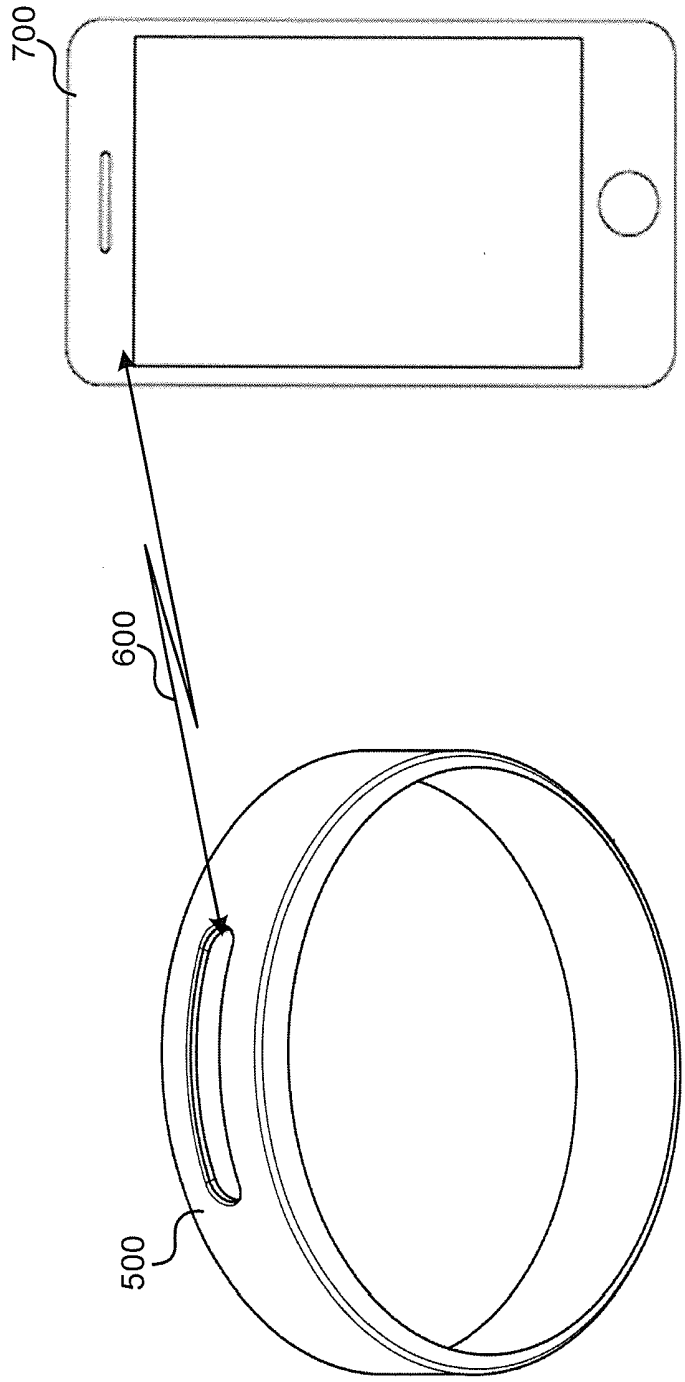


FIG. 7A

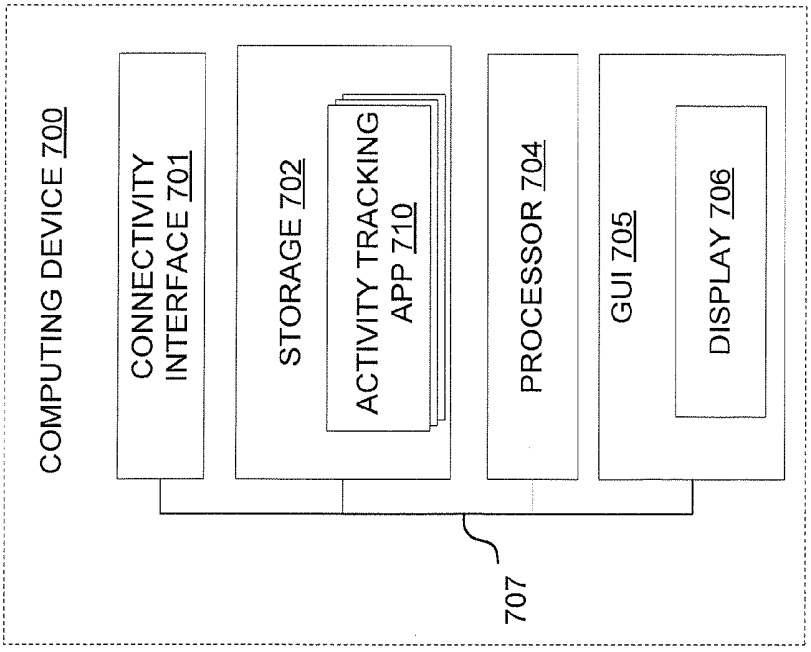

COMPUTING DEVICE 700
CONNECTIVITY INTERFACE 701
STORAGE 702
ACTIVITY TRACKING APP 710
PROCESSOR 704
GUI 705
DISPLAY 706
707

FIG. 7B

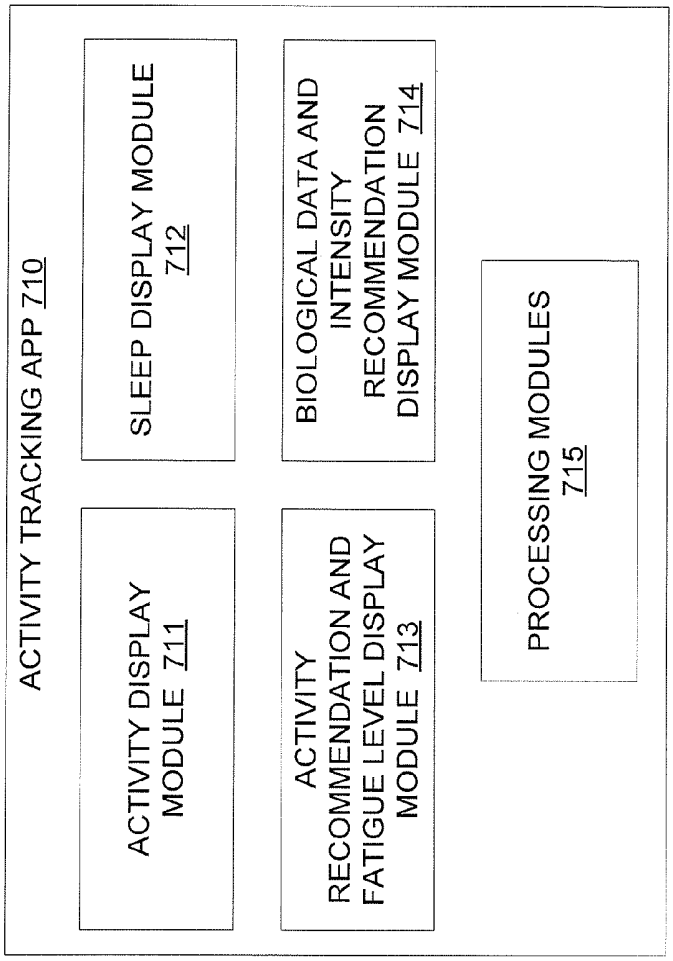

ACTIVITY TRACKING APP 710
ACTIVITY DISPLAY MODULE 711
SLEEP DISPLAY MODULE 712
ACTIVITY RECOMMENDATION AND FATIGUE LEVEL DISPLAY MODULE 713
BIOLOGICAL DATA AND INTENSITY RECOMMENDATION DISPLAY MODULE 714
PROCESSING MODULES 715

FIG. 7C

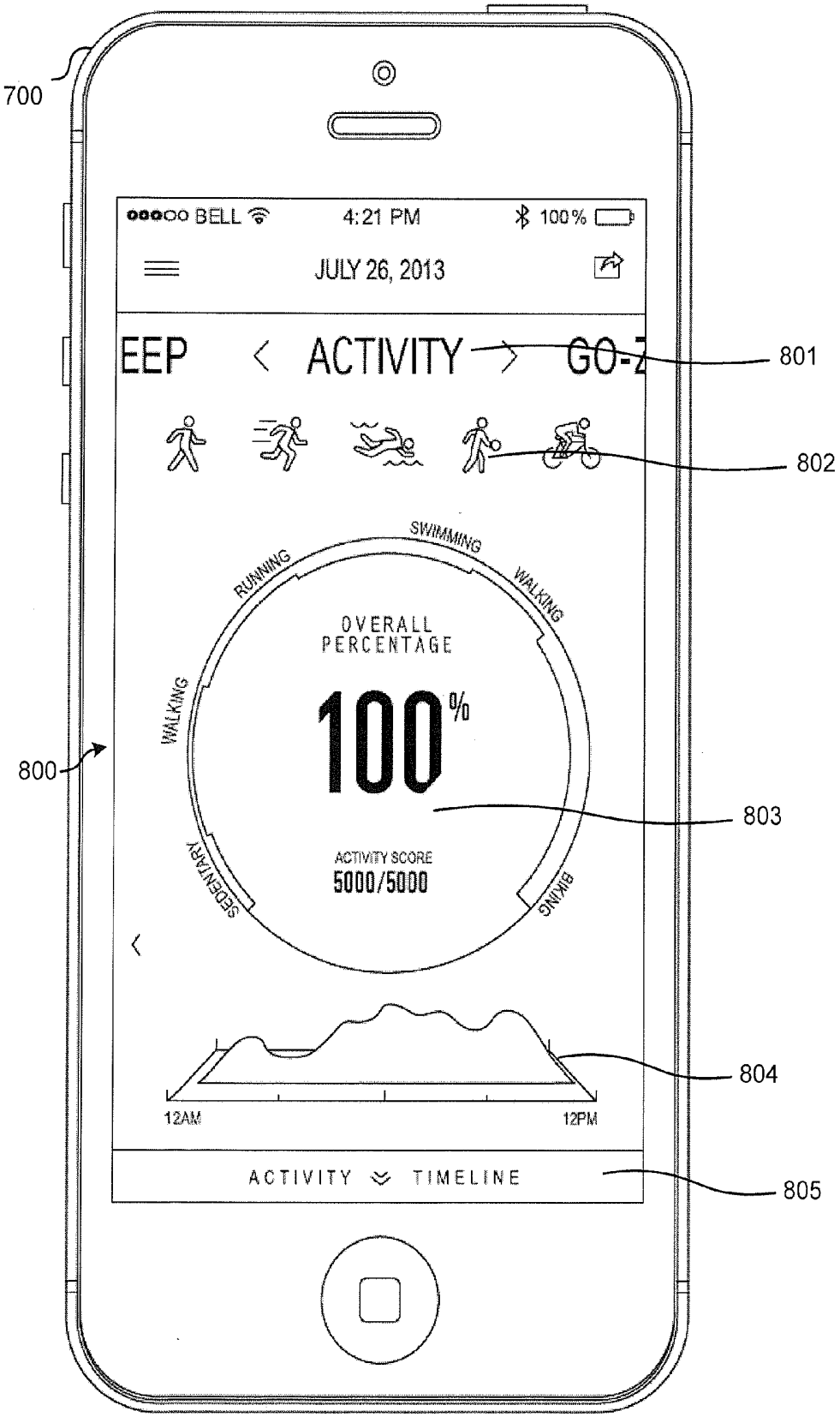

700
BELL
4:21 PM
100%
JULY 26, 2013
EEP
ACTIVITY
GO-Z
801
802
SWIMMING
RUNNING
WALKING
OVERALL
PERCENTAGE
100%
WALKING
800
803
ACTIVITY SCORE
5000/5000
SEDENTARY
BIKING
804
12AM
12PM
ACTIVITY
TIMELINE
805

FIG. 8

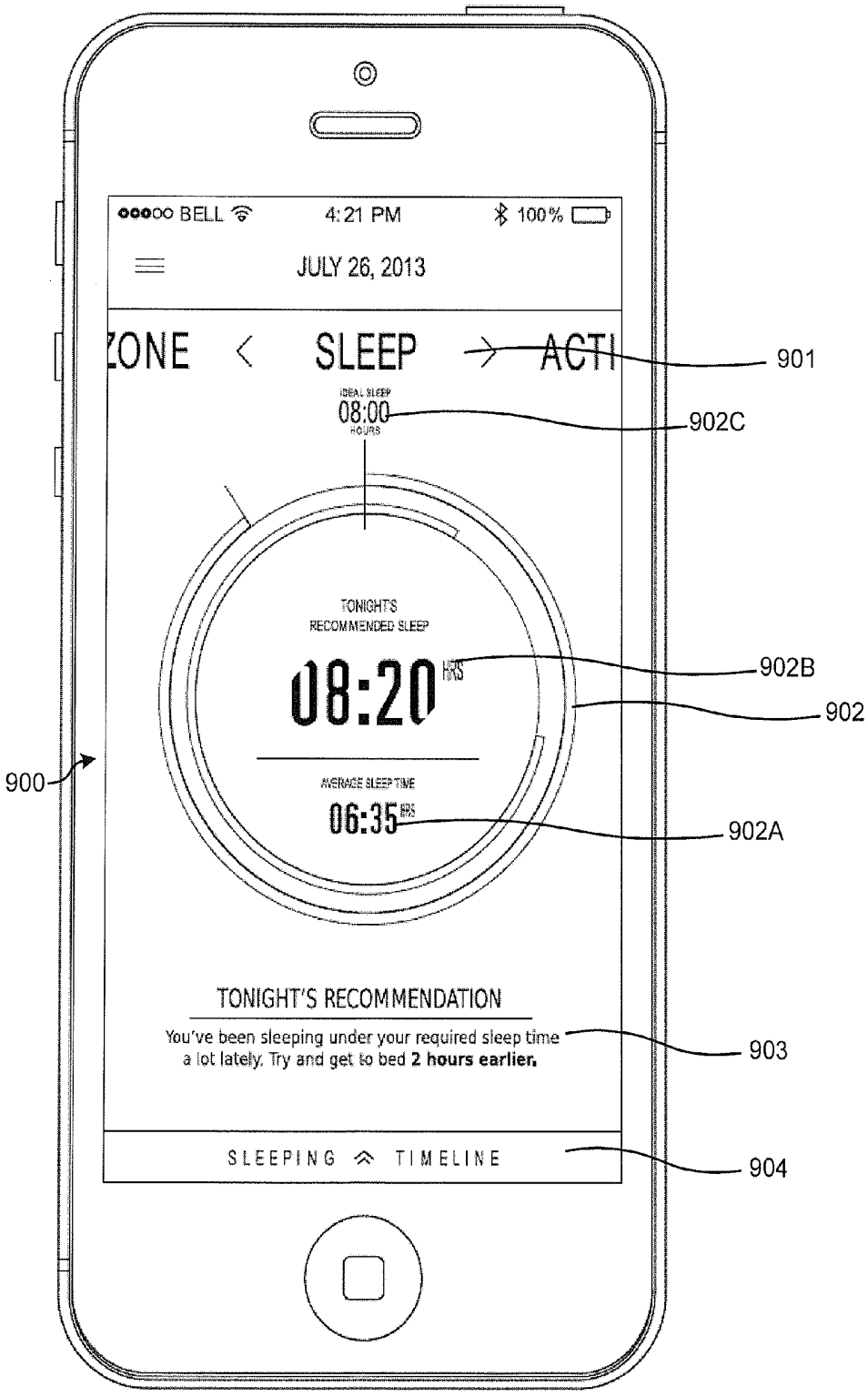

BELL
4:21 PM
100%
JULY 26, 2013
ZONE
SLEEP
ACTI
IDEAL SLEEP
08:00
HOURS
TONIGHT'S
RECOMMENDED SLEEP
08:20
HRS
AVERAGE SLEEP TIME
06:35
HRS
TONIGHT'S RECOMMENDATION
You've been sleeping under your required sleep time a lot lately. Try and get to bed 2 hours earlier.
SLEEPING
TIMELINE
900
901
902C
902B
902
902A
903
904

FIG. 9

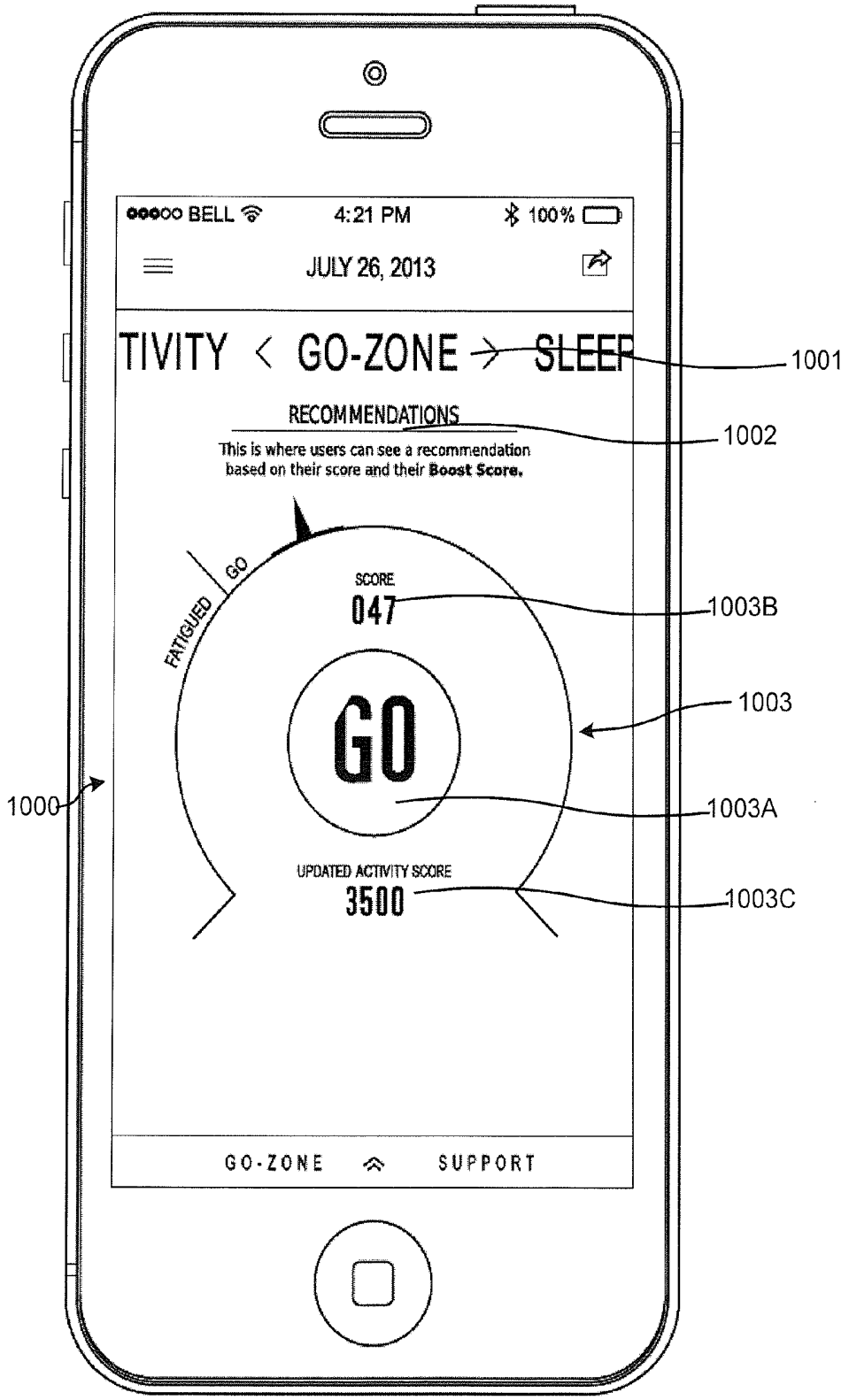

BELL
4:21 PM
100%
JULY 26, 2013
TIVITY < GO-ZONE > SLEEP
1001
RECOMMENDATIONS
1002
This is where users can see a recommendation based on their score and their Boost Score.
FATIGUED
GO
SCORE
047
1003B
GO
1003
1000
1003A
UPDATED ACTIVITY SCORE
3500
1003C
GO-ZONE
SUPPORT

FIG. 10A

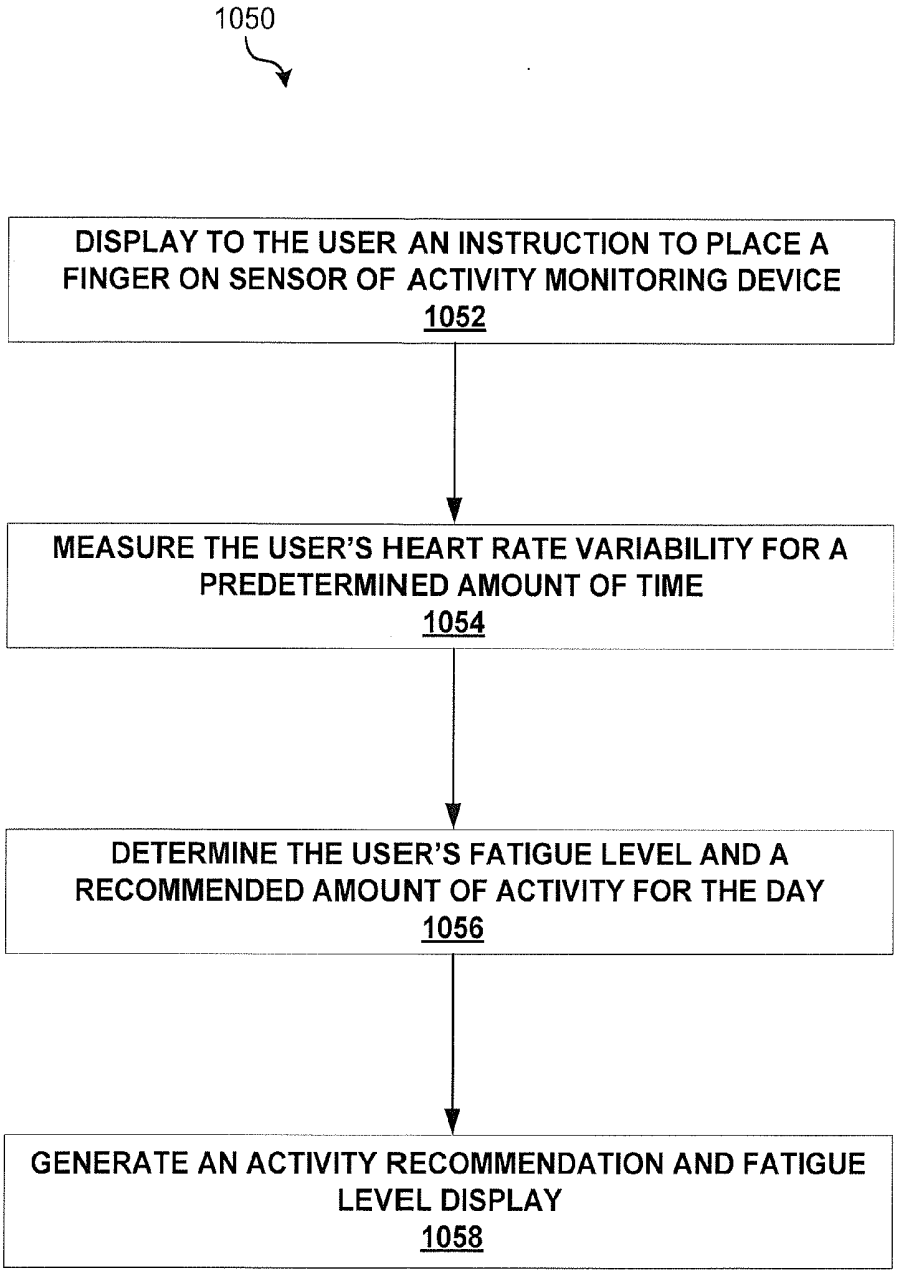

1050
DISPLAY TO THE USER AN INSTRUCTION TO PLACE A FINGER ON SENSOR OF ACTIVITY MONITORING DEVICE
1052
MEASURE THE USER'S HEART RATE VARIABILITY FOR A PREDETERMINED AMOUNT OF TIME
1054
DETERMINE THE USER'S FATIGUE LEVEL AND A RECOMMENDED AMOUNT OF ACTIVITY FOR THE DAY
1056
GENERATE AN ACTIVITY RECOMMENDATION AND FATIGUE LEVEL DISPLAY
1058

FIG. 10B

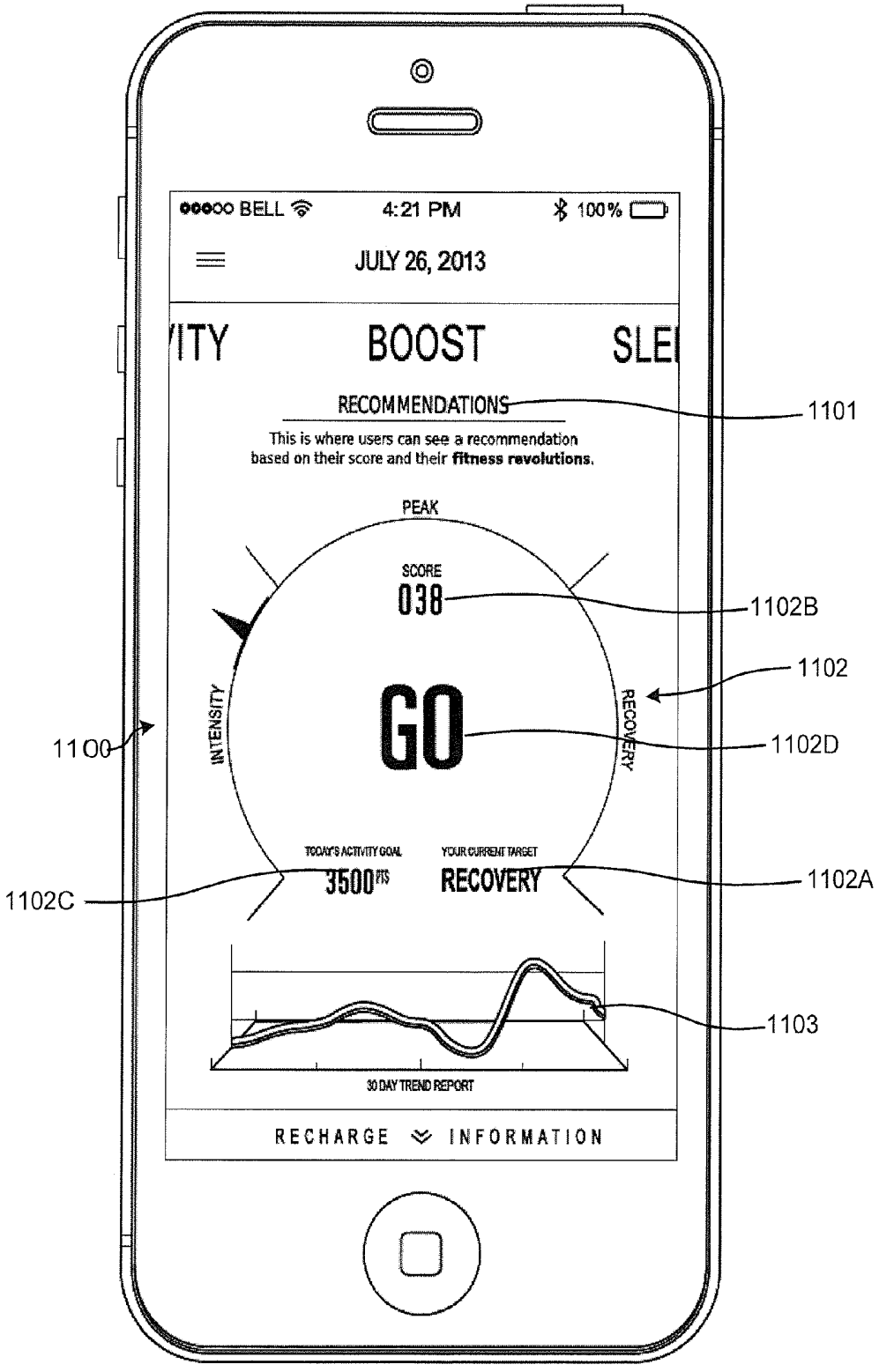

BELL
4:21 PM
100%
JULY 26, 2013
ITY
BOOST
SLEI
RECOMMENDATIONS
This is where users can see a recommendation based on their score and their fitness revolutions.
PEAK
SCORE
038
INTENSITY
GO
RECOVERY
TODAY'S ACTIVITY GOAL
3500 PTS
YOUR CURRENT TARGET
RECOVERY
30 DAY TREND REPORT
RECHARGE
INFORMATION
1100
1101
1102
1102A
1102B
1102C
1102D
1103

FIG. 11

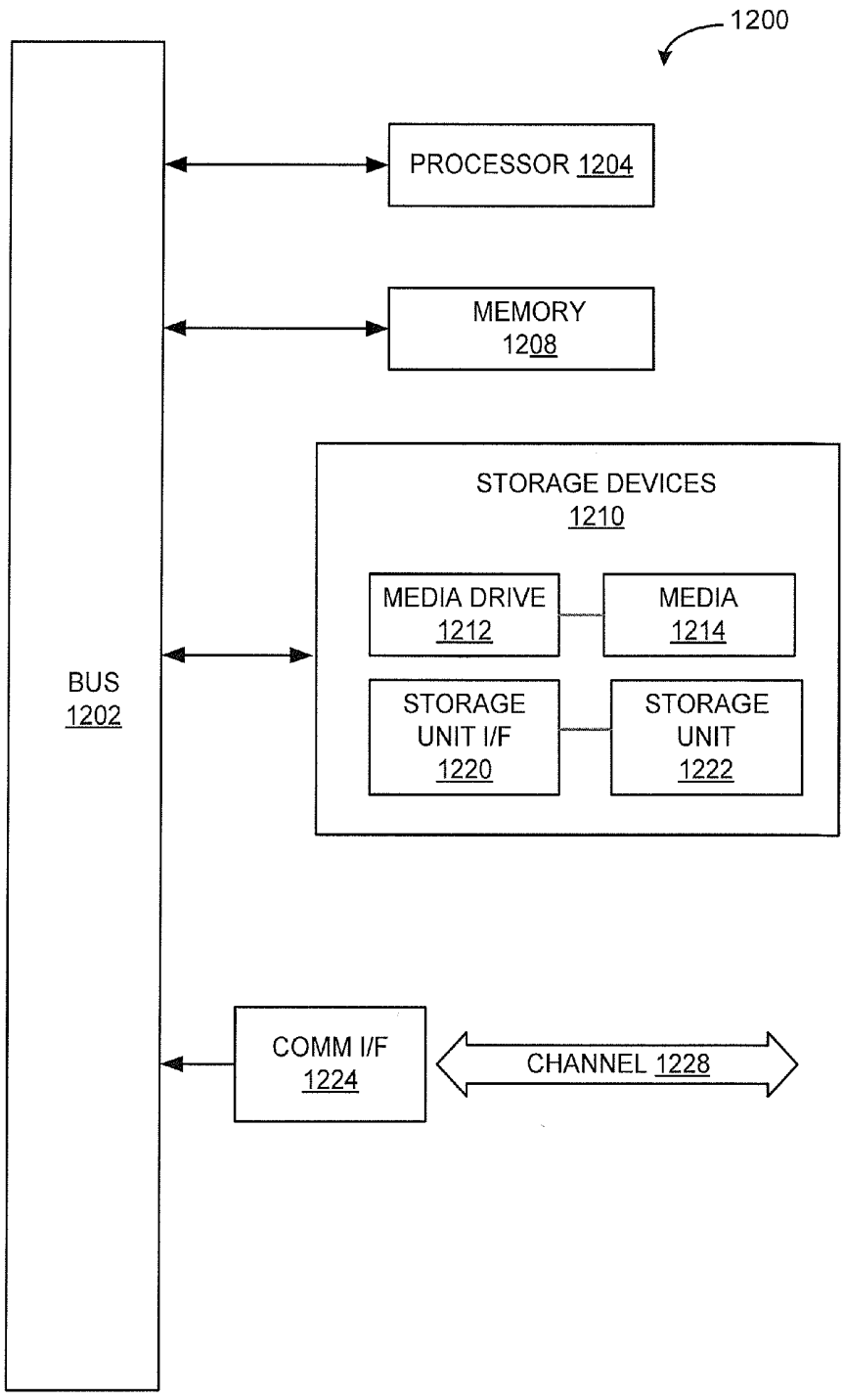

1200
PROCESSOR 1204
MEMORY 1208
STORAGE DEVICES 1210
MEDIA DRIVE 1212
MEDIA 1214
STORAGE UNIT I/F 1220
STORAGE UNIT 1222
BUS 1202
COMM I/F 1224
CHANNEL 1228

FIG. 12

SYSTEMS AND METHODS FOR DISPLAYING AND INTERACTING WITH DATA FROM AN ACTIVITY MONITORING DEVICE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. Provisional Application No. 61/924,486 filed on Jan. 7, 2014, which is incorporated herein by reference in its entirety, and is a continuation-in-part of U.S. Design patent application No. 29/513,066 filed on Dec. 24, 2014, which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] The present disclosure relates generally to activity monitoring devices, and more particularly, some embodiments relate to systems and methods for displaying and interacting with data from an activity monitoring device.

BRIEF SUMMARY OF THE DISCLOSURE

[0003] Systems and methods are provided in various embodiments for displaying and interacting with data from an activity monitoring device. In one embodiment, a system includes an activity monitoring device including a plurality of biosensors electrically coupled to a circuit board and configured to measure biological information of a user of the activity monitoring device, and a computing device communicatively coupled to the activity monitoring device. The computing device may include a display; one or more processors; and one or more non-transitory computer-readable mediums operatively coupled to at least one of the one or more processors and having instructions stored thereon that, when executed by at least one of the one or more processors, cause: at least one of the one or more processors to process the biological information measured by the activity monitoring device, and the display to display an activity display and a sleep display based on the processed biological information. In an implementation of this embodiment, the wristband includes a cavity notched on a radially inward side of the wristband that is shaped to substantially match a profile of the electronic capsule such that the electronic capsule is form-fit in place when positioned in the cavity.

[0004] In accordance with another embodiment of the technology disclosed herein, a method includes: collecting biological information of a user using one or more biosensors on an activity monitoring device; processing the biological information; displaying on a device display an activity display based on the processed biological information; displaying on the device display a sleep display based on the processed biological information; and displaying on the device display a recommendation and fatigue level display based on the processed biological information.

[0005] In an implementation of this embodiment, the processing operation and the displaying operations are performed when one or more processors of the device execute an activity tracking application stored on a non-transitory computer-readable medium of the device. In further implementations, displaying the activity display includes displaying at least three of a display navigation area, activity icons, an activity goal section, a live activity chart, and an activity timeline.

[0006] In accordance with yet another embodiment of the technology disclosed herein, a method includes displaying to a user an instruction to place a finger on a heart rate sensor of an activity monitoring device; measuring the user's heart rate variability (HRV) for a predetermined amount of time using the heart rate sensor; based on the user's measured HRV, determining a fatigue level and recommended amount of activity for the user for the current day; and displaying to the user the fatigue level and recommended amount of activity for the day. In implementations of this embodiment, the displayed fatigue level, and the displayed recommend amount of activity are displayed on a mobile device communicatively coupled to the activity monitoring device.

[0007] Other features and aspects of the disclosed method and system will become apparent from the following detailed description, taken in conjunction with the accompanying drawings, which illustrate, by way of example, the features in accordance with embodiments of the disclosure. The summary is not intended to limit the scope of the claimed disclosure, which is defined solely by the claims attached hereto.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The present disclosure, in accordance with one or more various embodiments, is described in detail with reference to the following figures. The figures are provided for purposes of illustration only and merely depict typical or example embodiments of the disclosure.

[0009] FIG. **1** illustrates a cross-sectional view of an example activity monitoring device that may be used to implement embodiments of the technology disclosed herein.

[0010] FIG. **2** illustrates a perspective view of an example activity monitoring device.

[0011] FIG. **3** illustrates a cross-sectional view of an example assembled activity monitoring device.

[0012] FIG. **4** illustrates a side view of an example electronic capsule.

[0013] FIG. **5** illustrates a cross-sectional view of an example electronic capsule.

[0014] FIG. **6** illustrates perspective views of example wristbands that may be used in implementations of the disclosed activity monitoring device.

[0015] FIG. **7**A illustrates an example communications environment in which embodiments of the disclosed technology may be implemented.

[0016] FIG. **7**B is a block diagram illustrating an example computing device that may be used to implement embodiments of the disclosed technology.

[0017] FIG. **7**C illustrates modules of an example activity monitoring application that may be used to implement embodiments of the disclosed technology.

[0018] FIG. **8** illustrates an activity display that may be associated with an activity display module of the activity monitoring application of FIG. **7**C.

[0019] FIG. **9** illustrates a sleep display that may be associated with a sleep display module of the activity monitoring application of FIG. **7**C.

[0020] FIG. **10**A illustrates an activity recommendation and fatigue level display that may be associated with an activity recommendation and fatigue level display module of the activity monitoring application of FIG. **7**C

[0021] FIG. **10**B is an operational flow diagram illustrating a particular method of generating the display of FIG. **10**A.

[0022] FIG. **11** illustrates a biological data and intensity recommendation display that may be associated with a biological data and intensity recommendation display module of the activity monitoring application of FIG. **7**C.

[0023] FIG. **12** illustrates an example computing module that may be used to implement various features of the systems and methods for estimating sky light probes disclosed herein.

DETAILED DESCRIPTION

[0024] The technology disclosed herein is directed toward systems and methods for interacting with and displaying data from an activity monitoring device. One embodiment of the disclosure includes a graphical user interface that enables a user to navigate between different data displays that graphically depict biological data collected from an activity monitoring device, as well as recommendations for sleep and activity levels.

[0025] FIG. **1** is a diagram illustrating a cross-sectional view of an exemplary activity monitoring device that may be used to implement the technology disclosed herein. The activity monitoring device comprises an electronic capsule **200** and a wristband **100**. The electronic capsule **200** comprises a wrist biosensor **210**, a finger biosensor **220**, a battery **230**, one or more logic circuits **240**, and a casing **250**. By way of example, the logic circuits may be printed circuit boards (PCB's). Finger biosensor **220** protrudes outward from a first side of casing **250**, and wrist biosensor **210** protrudes outward from a second side of casing **250**. The battery **230** and logic circuits **240** are enclosed inside of the casing **250**. In some embodiments, casing **250** is molded plastic or another moldable material. Additionally, the casing may be sealed using an ultrasonic welding process such that it is watertight. Battery **230** is electronically coupled and supplies power to the logic circuits **240**.

[0026] In some embodiments, the one or more logic circuits **240** comprise an accelerometer, a wireless transmitter, and circuitry. The logic circuits may further comprise a gyroscope. These logic circuits may be configured to process electronic input signals from the biosensors and the accelerometer, store the processed signals as data, and output the data using the wireless transmitter. The transmitter is configured to communicate using available wireless communications standards. For example, in some embodiments, the wireless transmitter may be a BLUETOOTH transmitter, a Wi-Fi transmitter, a GPS transmitter, a cellular transmitter, or some combination thereof. In an alternative embodiment, the wireless transmitter may further comprise a wired interface (e.g. USB, fiber optic, HDMI, etc.) for communicating stored data.

[0027] The logic circuits **240** are electrically coupled to the wrist biosensor **210** and the finger biosensor **220**. In addition, the logic circuits are configured to receive and process a plurality of electric signals from each of the wrist biosensor **210** and finger biosensor **220**. In some embodiments, the plurality of electric signals comprise an activation time signal and a recovery time signal. In these embodiments, the logic circuits **240** may process the plurality of signals to calculate an activation recovery interval equal to the difference between the activation time signal and the recovery time signal. In some embodiments, the plurality of signals may comprise electro-cardio signals from a heart. In these embodiments, the logic circuits may process the electro-cardio signals to calculate and store a RR-interval. The "RR-interval" may be the delta in time between two R-waves, where the R-waves are the electro-cardio signals generated by a ventricle contraction in the heart. In these embodiments, the RR-interval may be used to calculate and store a heart rate variability (HRV) value that indicates the variation over time between consecutive heartbeats.

[0028] In some embodiments, the logic circuits may further detect and store metrics such as the amount of physical activity, sleep, or rest over a period of time, or the amount of time without physical activity over a period of time. The logic circuits may use the HRV, the metrics, or some combination thereof to calculate a recovery score. In various embodiments, the recovery score may indicate the user's physical condition and aptitude for further physical activity for the current day. For example, the logic circuits may detect the amount of physical activity and the amount of sleep a user experienced over the last 48 hours, combine those metrics with the user's HRV, and calculate a recovery score. In various embodiments, the calculated recovery score may be based on any scale or range, such as, for example, a range between 1 and 10, a range between 1 and 100, or a range between 0% and 100%.

[0029] In some embodiments, the finger biosensor and wrist biosensor may be replaced or supplemented by a single biosensor. In implementations of these embodiments, the single biosensor is an optical biosensor such as a pulse oximeter configured to detect blood oxygen saturation levels. The pulse oximeter may output a signal to the logic circuits indicating a detected cardiac cycle phase, and the logic circuits may use the cardiac cycle phase data to calculate a HRV value.

[0030] Wristband **100** comprises a material **110** configured to encircle a human wrist. In one embodiment, wristband **100** is adjustable. A cavity **120** is notched on the radially inward facing side of the wristband and shaped to substantially the same dimensions as the profile of the electronic capsule. In addition, an aperture **130** is located in the material **110** within cavity **120**. The aperture **130** is shaped to substantially the same dimensions as the profile of the finger biosensor **220**. The cavity and aperture combination is designed to detachably couple to the electric capsule **200** such that, when the electric capsule **200** is positioned inside cavity **120**, the finger biosensor **220** protrudes through the aperture **130**. Electronic capsule **200** may further comprise one or more magnets **260** configured to secure capsule **200** to cavity **120**. Magnets **260** may be concealed in casing **250**. Alternatively, cavity **120** may be configured to conceal magnets **260** when electric capsule **200** detachably couples to the cavity and aperture combination.

[0031] Wristband **100** may further comprise a steel strip **140** concealed in material **110** within cavity **120**. In this embodiment, when the electronic capsule **200** is positioned within the cavity **120**, the one or more magnets **260** are attracted to the steel strip **140** and pull electronic capsule **200** radially outward with respect to the wristband. The force provided by magnets **260** may detachably secure electronic capsule **200** inside cavity **120**. In alternative embodiments, the electronic capsule may be positioned inside the wristband cavity and affixed using a form-fit, press-fit, snap-fit, friction-fit, VELCRO, or other temporary adhesion or attachment technology.

[0032] FIG. **2** illustrates a perspective view of one embodiment of an activity monitoring device. In this embodiment, wristband **100** and electronic capsule **200** are unassembled. Finger biosensor **220** protrudes from the top of electronic capsule **200**, and aperture **130** is substantially the same dimensions as the profile of finger biosensor **220**. In one embodiment, material **110** may comprise silicone.

[0033] FIG. **3** illustrates a cross-sectional view of one embodiment of a fully assembled wristband with a removable athletic monitoring device. In this embodiment, electronic capsule **200** is positioned inside cavity **120** of wristband **100** such that finger biosensor **220** protrudes through aperture **130**. Wrist biosensor **210** protrudes from the radially inward facing side of the assembled device. In this configuration, wrist biosensor **210** may contact the skin on a human wrist when the wrist band is attached to human wrist.

[0034] FIG. **4** illustrates a side view of an electronic capsule **200** according to one embodiment of the invention. More particularly, finger biosensor **220** protrudes from a first side of the electronic capsule **200** and wrist biosensor **210** protrudes from a second side of electronic capsule **200**. Casing **250** encloses components inside of electronic capsule **200**. The casing **250** may comprise moldable plastic. Alternatively, casing **250** may comprise metal, rubber, composite material, or another moldable material. In one embodiment, casing **200** is ultrasonically welded together to make the casing water tight. In alternative embodiments, other methods may be used to make the casing water tight.

[0035] FIG. **5** illustrates a cross-sectional view of electronic capsule **200**. In the illustrated embodiment, a finger biosensor **220** protrudes from a first side of the electronic capsule, and a wrist biosensor protrudes from a second side of the electronic capsule. Both the finger biosensor and the wrist biosensor are electronically coupled to the circuit boards **240**.

[0036] FIG. **6** is a perspective view of two possible variants of a wristband according to embodiments of the technology disclosed herein. Each wristband **100** comprises flexible material **110**, and aperture **130** is disposed on each wristband **100**. Each electronic capsule may be configured to standard dimensions such that it can be easily removed from one wristband and placed in another wristband. Wristbands may be constructed with different dimensions, including different diameters, widths, and thicknesses, in order to accommodate different human wrist sizes and different preferences. In one embodiment, the wristbands may be adjustable to accommodate different human wrist sizes. Further, the wristbands may be made with different colors, and different flexible materials. In some embodiments, the flexible material **110** comprises silicone. Alternatively, the flexible material may comprise plastic, metal chain links, composite material, leather, synthetic leather, fabric, or other flexible materials.

[0037] In some embodiments, the electronic capsule may be detachably coupled to a cavity on a shoe and/or a sock. In other embodiments, the electronic capsule may be detachably coupled to sports equipment. For example, the electronic capsule may be detachably coupled to a skateboard, a bicycle, a helmet, a surfboard, a paddle boat, a body board, a hang glider, or other piece of sports equipment. In these embodiments, the electronic capsule may be affixed to the sports equipment using magnets. Alternatively, in other embodiments, the electronic capsule can be affixed using a form-fit, snap-fit, press-fit, friction-fit suction cup, VELCRO, or other technology.

[0038] In one embodiment, the electronic capsule may further comprise an optical sensor such as a heart rate sensor or oximeter. For example, the oximeter may sense HRV by detecting blood oxygenation level changes as changes in coloration at the surface of a user's skin. In this embodiment, the optical sensor may be positioned to face radially inward towards a human wrist when the wristband is fit on the human wrist. Alternatively, the optical sensor may be separate from the electronic capsule, but still detachably coupled to the wristband and electronically coupled to the circuit boards enclosed in the electronic capsule.

[0039] In various embodiments, a computing device may receive and display data (e.g., biological information, accelerometer information, gyroscope information, etc.) collected by the activity monitoring activity device, thereby allowing the user to interact with the activity monitoring device and otherwise monitor the user's activity levels, fitness levels, and the like. Further, the computing device may be used to collect activity monitoring data using its own motion sensors (e.g., accelerometers, gyroscope, etc.) Further, still, the computing device may transmit information to the activity monitoring device to configure the activity monitoring device.

[0040] In certain embodiments, the computing device may be communicatively coupled to the activity monitoring device using a wireless connection. In other embodiments, the computing device may connect to the Internet and receive activity monitoring data over a web browser. For example, the activity monitoring data collected by the activity monitoring device may be stored on a file server and made accessible via a web server. In implementations of this embodiment, the computing device may remotely receive or send activity monitoring data by accessing the web server. In yet further embodiments, the computing device may be mechanically coupled, electrically coupled, or both mechanically and electrically coupled to the activity monitoring device.

[0041] FIG. **7**A illustrates an example wireless communications environment in which an activity monitoring device **500** may communicate with a computing device **700** over wireless communication link **600**. Computing device **700** may comprise any computing device (smartphone, tablet, laptop, workstation, etc.) configured to receive activity monitoring information from activity monitoring device **500**, and provide a graphical user interface (GUI) for displaying and interacting with the data collected by device **500**. In additional embodiments, computing device **700** itself may collect additional activity monitoring information that is provided for display. For example, if computing device **700** is a smartphone it may use built in accelerometers and GPS to collect additional data.

[0042] The GUI may be provided by various operating systems known in the art, such as, for example, iOS, Android, Windows Mobile, Windows, Mac OS, Chrome OS, Linux, Unix, a gaming platform OS (e.g., Xbox, PlayStation, Wii), etc. In various embodiments, the wireless communication link **600** may be based on one or more wireless communication protocols such as Bluetooth, Zigbee, 802.11 protocols, Infrared (IR), Radio Frequency (RF), etc.

[0043] FIG. **7**B is a block diagram illustrating example components of computing device **700**. As illustrated, computing device **700** comprises a connectivity interface **701**, storage **702** with activity tracking application **710**, processor **704**, a graphical user interface (GUI) **705** including display **706**, and a bus **707** for transferring data between the various components of computing device **700**.

[0044] Connectivity interface **701** connects computing device **700** to activity monitoring device **500** through a communication medium. The medium may comprise a wireless network system such as a Bluetooth system, a Zigbee system, an Infrared (IR) system, a Radio Frequency (RF) system, cellular network, a satellite network, a wireless local area network, or the like. The medium may additionally comprise a wired component such as a USB system.

[0045] Storage **702** may comprise volatile memory (e.g. RAM), non-volatile memory (e.g. flash storage), or some combination thereof. In various embodiments, storage **702** may store activity monitoring information collected by activity monitoring device **500**. Additionally, storage **702** may store an activity tracking application **710**, that when executed by processor **704**, allows a user to interact with the collected activity monitoring information.

[0046] In various embodiments, a user may interact with activity tracking application **710** via a GUI **705** including a display **706**, such as, for example, a touchscreen display that accepts various hand gestures as inputs. In accordance with various embodiments, activity tracking application **710** may process the activity monitoring information collected by activity monitoring device **500** and present it via display **706** of GUI **705**. Before describing activity tracking application **710** in further detail, it is worth noting that in some embodiments activity monitoring device **500** may filter the collected activity monitoring information prior to transmitting the information to computing device **700**. Accordingly, although the embodiments disclosed herein are described with reference to application **710** processing the received activity monitoring information, in various implementations various preprocessing operations may be performed by a processor of device **500**.

[0047] In various embodiments, application **710** may be initially configured/setup (e.g., after installation on a smartphone) based on a user's self-reported biological information, sleep information, and activity preference information. For example, during setup a user may be prompted via display **706** for biological information such as the user's gender, height, age, and weight. Further, during setup the user may be prompted for sleep information such as the amount of sleep needed by the user and the user's regular bed time. Further, still, the user may be prompted during setup for a preferred activity level and activities the user desires to be tracked (e.g., running, walking, swimming, biking, etc.) In various embodiments, described below, this self-reported information may be used in tandem with the information collected by device **500** to display activity monitoring information using various modules.

[0048] Following setup, activity tracking application **710** may be used by a user to monitor and define how active the user wants to be on a day-to-day basis based on the activity monitoring information (e.g., biological information, accelerometer information, gyroscope information, etc.) collected by activity monitoring device **500**. As illustrated, activity tracking application **710** may comprise various display modules, including an activity display module **711**, a sleep display module **712**, an activity recommendation and fatigue level display module **713**, and a biological data and intensity recommendation display module **714**. Additionally, activity tracking application **710** may comprise various processing modules **715** for processing the activity monitoring information (e.g., biological information, accelerometer information, gyroscope information, etc.) collected by the activity monitoring device. These modules may be implemented separately or in combination. For example, in some embodiments activity processing modules **715** may be directly integrated with one or more of display modules **711-714**.

[0049] As will be further described below, each of display modules **711-714** may be associated with a unique display provided by activity tracking app **710** via display **706**. That is, activity display module **711** may have an associated activity display, sleep display module **712** may have an associated sleep display, activity recommendation and fatigue level display module **713** may have an associated activity recommendation and fatigue level display, and biological data and intensity recommendation display module **714** may have an associated biological data and intensity recommendation display. FIGS. **8-11** illustrate a particular implementation of a GUI for app **710** comprising displays associated with each of display modules **711-714**.

[0050] FIG. **8** illustrates an activity display **800** that may be associated with an activity display module **711**. In various embodiments, activity display **800** may visually present to a user a record of the user's activity. As illustrated, activity display **800** may comprise a display navigation area **801**, activity icons **802**, activity goal section **803**, live activity chart **804**, and activity timeline **805**. As illustrated in this particular embodiment, display navigation area **801** allows a user to navigate between the various displays associated with modules **711-714** by selecting "right" and "left" arrows depicted at the top of the display on either side of the display screen title. An identification of the selected display may be displayed at the center of the navigation area **801**. Other selectable displays may displayed on the left and right sides of navigation area **801**. For example, in this embodiment the activity display **800** includes the identification "ACTIVITY" at the center of the navigation area. If the user wishes to navigate to a sleep display in this embodiment, the user may select the left arrow. In implementations where device **700** includes a touch screen display, navigation between the displays may be accomplished via finger swiping gestures. For example, in one embodiment a user may swipe the screen right or left to navigate to a different display screen. In another embodiment, a user may press the left or right arrows to navigate between the various display screens.

[0051] In various embodiments, activity icons **802** may be displayed on activity display **800** based on the user's predicted or self-reported activity. For example, in this particular embodiment activity icons **802** are displayed for the activities of walking, running, swimming, sport, and biking, indicating that the user has performed these five activities. In one particular embodiment, one or more modules of application **710** may estimate the activity being performed (e.g., sleeping, walking, running, or swimming) by comparing the data collected by an activity monitoring device's sensors to preloaded or learned activity profiles. For example, accelerometer data, gyroscope data, GPS sensor data, biological data, or some combination thereof may be compared to preloaded activity profiles of what the data should look like for a generic user that is running, walking, or swimming. In implementations of this embodiment, the preloaded activity profiles for each particular activity (e.g., sleeping, running, walking, or swimming) may be adjusted over time based on a history of the user's activity, thereby improving the activity predictive capability of the system. In additional implementations, activity display **800** allows a user to manually select the activity being performed (e.g., via touch gestures), thereby enabling the system to accurately adjust an activity profile associated with the user-selected activity. In this way, the system's activity estimating capabilities will improve over time as the system learns how particular activity profiles match an individual user. Particular methods of implementing this activity estimation and activity profile learning capability are described in U.S. patent application Ser. No. 14/568,835,

filed Dec. 12, 2014, titled "System and Method for Creating a Dynamic Activity Profile", and which is incorporated herein by reference in its entirety.

[0052] In various embodiments, an activity goal section **803** may display various activity metrics such a percentage activity goal providing an overview of the status of an activity goal for a timeframe (e.g., day or week), an activity score or other smart activity score associated with the goal, and activities for the measured timeframe (e.g., day or week). For example, the display may provide a user with a current activity score for the day versus a target activity score for the day. Particular methods of calculating activity scores are described in U.S. patent application Ser. No. 14/137,734, filed Dec. 20, 2013, titled "System and Method for Providing a Smart Activity Score", and which is incorporated herein by reference in its entirety.

[0053] In various embodiments, the percentage activity goal may be selected by the user (e.g., by a touch tap) to display to the user an amount of a particular activity (e.g., walking or running) needed to complete the activity goal (e.g., reach 100%). In additional embodiments, activities for the timeframe may be individually selected to display metrics of the selected activity such as points, calories, duration, or some combination thereof. For example, in this particular embodiment activity goal section **803** displays that 100% of the activity goal for the day has been accomplished. Further, activity goal section **803** displays that activities of walking, running, biking, and no activity (sedentary) were performed during the day. This is also displayed as a numerical activity score 5000/5000. In this embodiment, a breakdown of metrics for each activity (e.g., activity points, calories, and duration) for the day may be displayed by selecting the activity.

[0054] A live activity chart **804** may also display an activity trend of the aforementioned metrics (or other metrics) as a dynamic graph at the bottom of the display. For example, the graph may be used to show when user has been most active during the day (e.g., burning the most calories or otherwise engaged in an activity).

[0055] An activity timeline **805** may be displayed as a collapsed bar at the bottom of display **800**. In various embodiments, when a user selects activity timeline **805**, it may display a more detailed breakdown of daily activity, including, for example, an activity performed at a particular time with associated metrics, total active time for the measuring period, total inactive time for the measuring period, total calories burned for the measuring period, total distance traversed for the measuring period, and other metrics.

[0056] FIG. **9** illustrates a sleep display **900** that may be associated with a sleep display module **712**. In various embodiments, sleep display **900** may visually present to a user a record of the user's sleep history and sleep recommendations for the day. It is worth noting that in various embodiments one or more modules of the activity tracking application **710** may automatically determine or estimate when a user is sleeping (and awake) based on an a pre-loaded or learned activity profile for sleep, in accordance with the activity profiles described above. Alternatively, the user may interact with the sleep display **900** or other display to indicate that the current activity is sleep, enabling the system to better learn that individualized activity profile associated with sleep. The modules may also use data collected from the activity monitoring device, including fatigue level and activity score trends, to calculate a recommended amount of sleep. Systems and methods for implementing this functionality are described in greater detail in U.S. patent application Ser. No. 14/568,835, filed Dec. 12, 2014, and titled "System and Method for Creating a Dynamic Activity Profile", and U.S. patent application Ser. No. 14/137,742, filed Dec. 20, 2013, titled "System and Method for Providing an Interpreted Recovery Score," both of which are incorporated herein by reference in their entirety.

[0057] As illustrated, sleep display **900** may comprise a display navigation area **901**, a center sleep display area **902**, a textual sleep recommendation **903**, and a sleeping detail or timeline **904**. Display navigation area **901** allows a user to navigate between the various displays associated with modules **711-714** as described above. In this embodiment the sleep display **900** includes the identification "SLEEP" at the center of the navigation area **901**.

[0058] Center sleep display area **902** may display sleep metrics such as the user's recent average level of sleep or sleep trend **902**A, a recommended amount of sleep for the night **902**B, and an ideal average sleep amount **902**C. In various embodiments, these sleep metrics may be displayed in units of time (e.g., hours and minutes) or other suitable units. Accordingly, a user may compare a recommended sleep level for the user (e.g., metric **902**B) against the user's historical sleep level (e.g., metric **902**A). In one embodiment, the sleep metrics **902**A-**902**C may be displayed as a pie chart showing the recommended and historical sleep times in different colors. In another embodiment, sleep metrics **902**A-**902**C may be displayed as a curvilinear graph showing the recommended and historical sleep times as different colored, concentric lines. This particular embodiment is illustrated in example sleep display **900**, which illustrates an inner concentric line for recommended sleep metric **902**B and an outer concentric line for average sleep metric **902**A. In this example, the lines are concentric about a numerical display of the sleep metrics.

[0059] In various embodiments, a textual sleep recommendation **903** may be displayed at the bottom or other location of display **900** based on the user's recent sleep history. A sleeping detail or timeline **904** may also be displayed as a collapsed bar at the bottom of sleep display **900**. In various embodiments, when a user selects sleeping detail **904**, it may display a more detailed breakdown of daily sleep metrics, including, for example, total time slept, bedtime, and wake time. In particular implementations of these embodiments, the user may edit the calculated bedtime and wake time. In additional embodiments, the selected sleeping detail **904** may graphically display a timeline of the user's movements during the sleep hours, thereby providing an indication of how restless or restful the user's sleep is during different times, as well as the user's sleep cycles. For the example, the user's movements may be displayed as a histogram plot charting the frequency and/or intensity of movement during different sleep times.

[0060] FIG. **10**A illustrates an activity recommendation and fatigue level display **1000** that may be associated with an activity recommendation and fatigue level display module **713**. In various embodiments, display **1000** may visually present to a user the user's current fatigue level and a recommendation of whether or not engage in activity. It is worth noting that one or more modules of activity tracking application **710** may track fatigue level based on data received from the activity monitoring device **500**, and make an activity level recommendation. For example, HRV data tracked at regular intervals may be compared with other biological data to determine how fatigued the user is. Additionally, the HRV data

may be compared to pre-loaded or learned fatigue level profiles, as well as a user's specified activity goals. Particular systems and methods for implementing this functionality are described in greater detail in U.S. patent application Ser. No. 14/140,414, filed Dec. 24, 2013, titled "System and Method for Providing an Intelligent Goal Recommendation for Activity Level", and which is incorporated herein by reference in its entirety.

[0061] As illustrated, display **1000** may comprise a display navigation area **1001** (as described above), a textual activity recommendation **1002**, and a center fatigue and activity recommendation display **1003**. Textual activity recommendation **1002** may, for example, display a recommendation as to whether a user is too fatigued for activity, and thus must rest, or if the user should be active. Center display **1003** may display an indication to a user to be active (or rest) **1003**A (e.g., "go"), an overall score **1003**B indicating the body's overall readiness for activity, and an activity goal score **1003**C indicating an activity goal for the day or other period. In various embodiments, indication **1003**A may be displayed as a result of a binary decision—for example, telling the user to be active, or "go"—or on a scaled indicator—for example, a circular dial display showing that a user should be more or less active depending on where a virtual needle is pointing on the dial.

[0062] In various embodiments, display **1000** may be generated by measuring the user's HRV at the beginning of the day (e.g., within 30 minutes of waking up.) FIG. **10**B is an operational flow diagram illustrating a particular method **1050** of implementing this functionality. At operation **1052**, computing device **700** displays to the user an instruction to place a finger on a sensor of activity monitoring device **500**. In various embodiments, this instruction may be accompanied by other information, such as, for example, an instruction to remain relaxed while the variability in the user's heart signal (i.e., HRV) is being measured, an amount of time remaining until the HRV has been sufficiently measured, and an indication that the user's HRV is detected. At operation **1054**, the user's HRV is measured by monitoring device **500** for a predetermined amount of time (e.g., two minutes). In various embodiments, the amount of remaining HRV measuring time is displayed to the user. Upon completion of HRV measuring (or during HRV measuring), at operation **1056** one or more processing modules of computing device **700** determines the user's fatigue level for the day and a recommended amount of activity for the day. At operation **1058**, an activity recommendation and fatigue level display **1000** is generated based on this determination.

[0063] FIG. **11** illustrates a biological data and intensity recommendation display **1100** that may be associated with a biological data and intensity recommendation display module **714**. In various embodiments, display **1100** may guide a user of the activity monitoring system through various fitness cycles of high-intensity activity followed by lower-intensity recovery based on the user's body fatigue and recovery level, thereby boosting the user's level of fitness and capacity on each cycle.

[0064] As illustrated, display **1100** may include a textual recommendation **1101**, a center display **1102**, and a historical plot **1103** indicating the user's transition between various fitness cycles. In various embodiments, textual recommendation **1101** may display a current recommended level of activity or training intensity based on current fatigue levels, current activity levels, user goals, pre-loaded profiles, activity scores, smart activity scores, historical trends, and other biometrics of interest. Center display **1102** may display a fitness cycle target **1102**A (e.g., intensity, peak, fatigue, or recovery), an overall score **1102**B indicating the body's overall readiness for activity, an activity goal score **1102**C indicating an activity goal for the day or other period, and an indication to a user to be active (or rest) **1102**D (e.g., "go"). The data of center display **1102** may be displayed, for example, on a virtual dial, as text, or some combination thereof. In one particular embodiment implementing a dial display, recommended transitions between various fitness cycles (e.g., intensity and recovery) may be indicated by the dial transitioning between predetermined markers.

[0065] In various embodiments, display **1100** may display a historical plot **1103** that indicates the user's historical and current transitions between various fitness cycles over a predetermined period of time (e.g., 30 days). The fitness cycles, may include, for example, a fatigue cycle, a performance cycle, and a recovery cycle. Each of these cycles may be associated with a predetermined score range (e.g., overall score **1102**B). For example, in one particular implementation a fatigue cycle may be associated with an overall score range of 0 to 33, a performance cycle may be associated with an overall score range of 34 to 66, and a recovery cycle may be associated with an overall score range of 67 to 100. The transitions between the fitness cycles may be demarcated by horizontal lines intersecting the historical plot **1103** at the overall score range boundaries. For example, the illustrated historical plot **1103** includes two horizontal lines intersecting the historical plot. In this example, measurements below the lowest horizontal line indicate a first fitness cycle (e.g., fatigue cycle), measurements between the two horizontal lines indicate a second fitness cycle (e.g., performance cycle), and measurements above the highest horizontal line indicate a third fitness cycle (e.g., recovery cycle).

[0066] FIG. **12** illustrates an example computing module that may be used to implement various features of the systems and methods for estimating sky probes disclosed herein. As used herein, the term module might describe a given unit of functionality that can be performed in accordance with one or more embodiments of the present application. As used herein, a module might be implemented utilizing any form of hardware, software, or a combination thereof. For example, one or more processors, controllers, ASICs, PLAs, PALs, CPLDs, FPGAs, logical components, software routines or other mechanisms might be implemented to make up a module. In implementation, the various modules described herein might be implemented as discrete modules or the functions and features described can be shared in part or in total among one or more modules. In other words, as would be apparent to one of ordinary skill in the art after reading this description, the various features and functionality described herein may be implemented in any given application and can be implemented in one or more separate or shared modules in various combinations and permutations. Even though various features or elements of functionality may be individually described or claimed as separate modules, one of ordinary skill in the art will understand that these features and functionality can be shared among one or more common software and hardware elements, and such description shall not require or imply that separate hardware or software components are used to implement such features or functionality.

[0067] Where components or modules of the application are implemented in whole or in part using software, in one

embodiment, these software elements can be implemented to operate with a computing or processing module capable of carrying out the functionality described with respect thereto. One such example computing module is shown in FIG. **12**. Various embodiments are described in terms of this example-computing module **1200**. After reading this description, it will become apparent to a person skilled in the relevant art how to implement the application using other computing modules or architectures.

[0068] Referring now to FIG. **12**, computing module **1200** may represent, for example, computing or processing capabilities found within desktop, laptop, notebook, and tablet computers; hand-held computing devices (tablets, PDA's, smart phones, cell phones, palmtops, etc.); mainframes, supercomputers, workstations or servers; or any other type of special-purpose or general-purpose computing devices as may be desirable or appropriate for a given application or environment. Computing module **1200** might also represent computing capabilities embedded within or otherwise available to a given device. For example, a computing module might be found in other electronic devices such as, for example, digital cameras, navigation systems, cellular telephones, portable computing devices, modems, routers, WAPs, terminals and other electronic devices that might include some form of processing capability.

[0069] Computing module **1200** might include, for example, one or more processors, controllers, control modules, or other processing devices, such as a processor **1204**. Processor **1204** might be implemented using a general-purpose or special-purpose processing engine such as, for example, a microprocessor, controller, or other control logic. In the illustrated example, processor **1204** is connected to a bus **1202**, although any communication medium can be used to facilitate interaction with other components of computing module **1200** or to communicate externally.

[0070] Computing module **1200** might also include one or more memory modules, simply referred to herein as main memory **1208**. For example, preferably random access memory (RAM) or other dynamic memory, might be used for storing information and instructions to be executed by processor **1204**. Main memory **1208** might also be used for storing temporary variables or other intermediate information during execution of instructions to be executed by processor **1204**. Computing module **1200** might likewise include a read only memory ("ROM") or other static storage device coupled to bus **1202** for storing static information and instructions for processor **1204**.

[0071] The computing module **1200** might also include one or more various forms of information storage mechanism **1210**, which might include, for example, a media drive **1212** and a storage unit interface **1220**. The media drive **1212** might include a drive or other mechanism to support fixed or removable storage media **1214**. For example, a hard disk drive, a solid state drive, a magnetic tape drive, an optical disk drive, a CD, DVD, or Blu-ray drive (R or RW), or other removable or fixed media drive might be provided. Accordingly, storage media **1214** might include, for example, a hard disk, a solid state drive, magnetic tape, cartridge, optical disk, a CD, DVD, Blu-ray or other fixed or removable medium that is read by, written to or accessed by media drive **1212**. As these examples illustrate, the storage media **1214** can include a computer usable storage medium having stored therein computer software or data.

[0072] In alternative embodiments, information storage mechanism **1210** might include other similar instrumentalities for allowing computer programs or other instructions or data to be loaded into computing module **1200**. Such instrumentalities might include, for example, a fixed or removable storage unit **1222** and an interface **1220**. Examples of such storage units **1222** and interfaces **1220** can include a program cartridge and cartridge interface, a removable memory (for example, a flash memory or other removable memory module) and memory slot, a PCMCIA slot and card, and other fixed or removable storage units **1222** and interfaces **1220** that allow software and data to be transferred from the storage unit **1222** to computing module **1200**.

[0073] Computing module **1200** might also include a communications interface **1224**. Communications interface **1224** might be used to allow software and data to be transferred between computing module **1200** and external devices. Examples of communications interface **1224** might include a modem or softmodem, a network interface (such as an Ethernet, network interface card, WiMedia, IEEE 802.XX or other interface), a communications port (such as for example, a USB port, IR port, RS232 port Bluetooth® interface, or other port), or other communications interface. Software and data transferred via communications interface **1224** might typically be carried on signals, which can be electronic, electromagnetic (which includes optical) or other signals capable of being exchanged by a given communications interface **1224**. These signals might be provided to communications interface **1224** via a channel **1228**. This channel **1228** might carry signals and might be implemented using a wired or wireless communication medium. Some examples of a channel might include a phone line, a cellular link, an RF link, an optical link, a network interface, a local or wide area network, and other wired or wireless communications channels.

[0074] In this document, the terms "computer program medium" and "computer usable medium" are used to generally refer to transitory or non-transitory media such as, for example, memory **1208**, storage unit **1220**, media **1214**, and channel **1228**. These and other various forms of computer program media or computer usable media may be involved in carrying one or more sequences of one or more instructions to a processing device for execution. Such instructions embodied on the medium, are generally referred to as "computer program code" or a "computer program product" (which may be grouped in the form of computer programs or other groupings). When executed, such instructions might enable the computing module **1200** to perform features or functions of the present application as discussed herein.

[0075] Although described above in terms of various exemplary embodiments and implementations, it should be understood that the various features, aspects and functionality described in one or more of the individual embodiments are not limited in their applicability to the particular embodiment with which they are described, but instead can be applied, alone or in various combinations, to one or more of the other embodiments of the application, whether or not such embodiments are described and whether or not such features are presented as being a part of a described embodiment. Thus, the breadth and scope of the present application should not be limited by any of the above-described exemplary embodiments.

[0076] Terms and phrases used in this document, and variations thereof, unless otherwise expressly stated, should be construed as open ended as opposed to limiting. As examples

of the foregoing: the term "including" should be read as meaning "including, without limitation" or the like; the term "example" is used to provide exemplary instances of the item in discussion, not an exhaustive or limiting list thereof; the terms "a" or "an" should be read as meaning "at least one," "one or more" or the like; and adjectives such as "conventional," "traditional," "normal," "standard," "known" and terms of similar meaning should not be construed as limiting the item described to a given time period or to an item available as of a given time, but instead should be read to encompass conventional, traditional, normal, or standard technologies that may be available or known now or at any time in the future. Likewise, where this document refers to technologies that would be apparent or known to one of ordinary skill in the art, such technologies encompass those apparent or known to the skilled artisan now or at any time in the future.

[0077] The presence of broadening words and phrases such as "one or more," "at least," "but not limited to" or other like phrases in some instances shall not be read to mean that the narrower case is intended or required in instances where such broadening phrases may be absent. The use of the term "module" does not imply that the components or functionality described or claimed as part of the module are all configured in a common package. Indeed, any or all of the various components of a module, whether control logic or other components, can be combined in a single package or separately maintained and can further be distributed in multiple groupings or packages or across multiple locations.

[0078] Additionally, the various embodiments set forth herein are described in terms of exemplary block diagrams, flow charts and other illustrations. As will become apparent to one of ordinary skill in the art after reading this document, the illustrated embodiments and their various alternatives can be implemented without confinement to the illustrated examples. For example, block diagrams and their accompanying description should not be construed as mandating a particular architecture or configuration.

[0079] While various embodiments of the present disclosure have been described above, it should be understood that they have been presented by way of example only, and not of limitation. Likewise, the various diagrams may depict an example architectural or other configuration for the disclosure, which is done to aid in understanding the features and functionality that can be included in the disclosure. The disclosure is not restricted to the illustrated example architectures or configurations, but the desired features can be implemented using a variety of alternative architectures and configurations. Indeed, it will be apparent to one of skill in the art how alternative functional, logical or physical partitioning and configurations can be implemented to implement the desired features of the present disclosure. Also, a multitude of different constituent module names other than those depicted herein can be applied to the various partitions. Additionally, with regard to flow diagrams, operational descriptions and method claims, the order in which the steps are presented herein shall not mandate that various embodiments be implemented to perform the recited functionality in the same order unless the context dictates otherwise.

[0080] Although the disclosure is described above in terms of various exemplary embodiments and implementations, it should be understood that the various features, aspects and functionality described in one or more of the individual embodiments are not limited in their applicability to the particular embodiment with which they are described, but instead can be applied, alone or in various combinations, to one or more of the other embodiments of the disclosure, whether or not such embodiments are described and whether or not such features are presented as being a part of a described embodiment. Thus, the breadth and scope of the present disclosure should not be limited by any of the above-described exemplary embodiments.

[0081] Terms and phrases used in this document, and variations thereof, unless otherwise expressly stated, should be construed as open ended as opposed to limiting. As examples of the foregoing: the term "including" should be read as meaning "including, without limitation" or the like; the term "example" is used to provide exemplary instances of the item in discussion, not an exhaustive or limiting list thereof; the terms "a" or "an" should be read as meaning "at least one," "one or more" or the like; and adjectives such as "conventional," "traditional," "normal," "standard," "known" and terms of similar meaning should not be construed as limiting the item described to a given time period or to an item available as of a given time, but instead should be read to encompass conventional, traditional, normal, or standard technologies that may be available or known now or at any time in the future. Likewise, where this document refers to technologies that would be apparent or known to one of ordinary skill in the art, such technologies encompass those apparent or known to the skilled artisan now or at any time in the future.

[0082] The presence of broadening words and phrases such as "one or more," "at least," "but not limited to" or other like phrases in some instances shall not be read to mean that the narrower case is intended or required in instances where such broadening phrases may be absent. The use of the term "module" does not imply that the components or functionality described or claimed as part of the module are all configured in a common package. Indeed, any or all of the various components of a module, whether control logic or other components, can be combined in a single package or separately maintained and can further be distributed in multiple groupings or packages or across multiple locations.

[0083] Additionally, the various embodiments set forth herein are described in terms of exemplary block diagrams, flow charts and other illustrations. As will become apparent to one of ordinary skill in the art after reading this document, the illustrated embodiments and their various alternatives can be implemented without confinement to the illustrated examples. For example, block diagrams and their accompanying description should not be construed as mandating a particular architecture or configuration.

What is claimed is:

1. A system, comprising:

an activity monitoring device comprising a plurality of biosensors electrically coupled to a circuit board and configured to measure biological information of a user of the activity monitoring device; and

a computing device communicatively coupled to the activity monitoring device, wherein the computing device comprises:

a display;

one or more processors; and

one or more non-transitory computer-readable mediums operatively coupled to at least one of the one or more processors and having instructions stored thereon that, when executed by at least one of the one or more processors, cause:

at least one of the one or more processors to process the biological information measured by the activity monitoring device; and

the display to display an activity display and a sleep display based on the processed biological information.

2. The system of claim **1**, wherein the activity monitoring device comprises an electronic capsule and a wristband.

3. The system of claim **2**, wherein the wristband comprises a cavity notched on a radially inward side of the wristband that is shaped to substantially match a profile of the electronic capsule such that the electronic capsule is form-fit in place when positioned in the cavity.

4. The system of claim **1**, wherein the activity display comprises at least three of a display navigation area, activity icons, an activity goal section, a live activity chart, and an activity timeline.

5. The system of claim **4**, wherein the activity display comprises a display navigation area, activity icons, an activity goal section, a live activity chart, and an activity timeline.

6. The system of claim **1**, wherein the sleep display comprises at least two of a display navigation area, a center sleep display area for displaying sleep time metrics, a textual sleep recommendation, and a collapsed sleep detail section.

7. The system of claim **6**, wherein the sleep display comprises a display navigation area, a center sleep display area for displaying sleep time metrics, a textual sleep recommendation, and a collapsed sleep detail section.

8. The system of claim **1**, wherein the instructions when executed by at least one of the one or more processors, further cause the display to display a recommendation and fatigue level display based on the processed biological information.

9. The system of claim **8**, wherein the instructions when executed by at least one of the one or more processors, further cause the display to display a biological data and intensity recommendation display based on the processed biological information.

10. The system of claim **8**, wherein the computing device is communicatively coupled to the activity monitoring device via a Bluetooth connection, and wherein the computing device is a mobile device.

11. A method comprising:

collecting biological information of a user using one or more biosensors on an activity monitoring device;

processing the biological information;

displaying on a device display an activity display based on the processed biological information;

displaying on the device display a sleep display based on the processed biological information; and

displaying on the device display a recommendation and fatigue level display based on the processed biological information.

12. The method of claim **11**, wherein the displaying operations are performed by a mobile device communicatively coupled to the activity monitoring device.

13. The method of claim **12**, wherein one or more processors of the mobile device process the biological information.

14. The method of claim **13**, wherein the processing operation and the displaying operations are performed when the one or more processors of the mobile device execute an activity tracking application stored on a non-transitory computer-readable medium of the mobile device that is operatively coupled to the one or more processors.

15. The method of claim **14**, wherein displaying the activity display comprises displaying at least three of a display navigation area, activity icons, an activity goal section, a live activity chart, and an activity timeline.

16. The method of claim **14**, wherein displaying the sleep display comprises displaying at least three of a display navigation area, a center sleep display area with one or more sleep time metrics, a textual sleep recommendation, and a collapsed sleep detail section.

17. A method, comprising:

displaying to a user an instruction to place a finger on a heart rate sensor of an activity monitoring device;

measuring the user's heart rate variability (HRV) for a predetermined amount of time using the heart rate sensor;

based on the user's measured HRV, determining a fatigue level and recommended amount of activity for the user for a predetermined period; and

displaying to the user the fatigue level and recommended amount of activity for the predetermined period.

18. The method of claim **17**, wherein the predetermined period corresponds to a day the user's HRV is measured.

19. The method of claim **18**, wherein the displayed instruction, the displayed fatigue level, and the displayed recommend amount of activity are displayed on a mobile device communicatively coupled to the activity monitoring device.

20. The method of claim **19**, wherein the activity monitoring device comprises an electronic capsule and a wristband configured to attached to a wrist of the user.

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专利名称(译)	用于显示来自活动监视设备的数据并与之交互的系统和方法		
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摘要(译)

公开了用于显示来自活动监视设备的数据并与之交互的方法和系统。在一个实施方式中，系统可以包括活动监测设备，该活动监测设备包括多个生物传感器，所述生物传感器电耦合到电路板并且被配置为测量活动监测设备的用户的生物信息;以及通信地耦合到活动监视设备的计算设备。计算设备可以包括显示器;一个或多个处理器;一个或多个非暂时性计算机可读介质，可操作地耦合到所述一个或多个处理器中的至少一个，并且具有存储在其上的指令，当由所述一个或多个处理器中的至少一个执行时，所述指令导致：至少一个一个或多个处理器处理由活动监测设备测量的生物信息，并且显示器基于处理的生物信息显示活动显示和睡眠显示。