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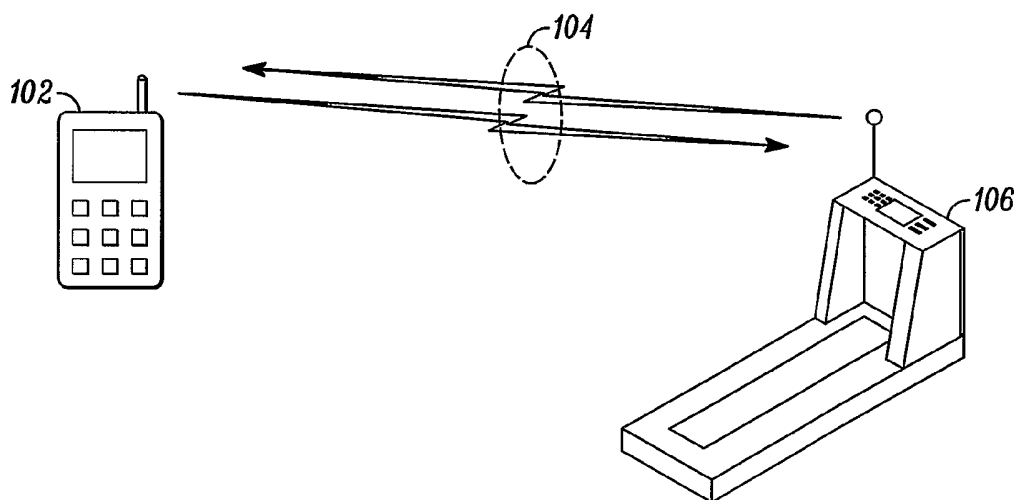
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(54) Title: EXERCISE DATA MANAGEMENT METHODS AND DEVICES THEREFORE



(57) Abstract: A method and device for exercise data management is disclosed. The method comprises storing exercise data in a memory of a wireless communication device (102) wherein exercise data includes setup parameters and personal exercise data. The device determined a change to the setup parameters based on exercise data received by the device. New setup parameters are generated and sent to an exercise machine (106) wherein the exercise machine utilizes the setup parameters to configure the machine.

## EXERCISE DATA MANAGEMENT METHODS AND DEVICES THEREFORE

### FIELD OF THE DISCLOSURE

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The present disclosure relates generally to the management of exercise data, and more particularly to the collecting, tracking and the sharing of exercise data with exercise equipment enabled to communicate portable wireless devices, and methods therefore.

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### BACKGROUND

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The distribution of content from wireless devices promises new business opportunities for network operators and device users. The incorporation of short-range wireless communication protocols in to electronic devices presents an opportunity for an intuitive electronic mechanism allowing consumers to exchange content with other electronic equipment. This provides opportunities for electronic device manufactures and service providers to increase revenue by allowing users to exchange data seamlessly from one electronic device to another.

25

Tracking the effectiveness of one's exercise in a machine based setting can be difficult and inaccurate as the individual exercising needs to manually take measurements and record data off of all machines used. Some data can be lost or erroneously recorded resulting in inaccurate assessment of ones exercise progress and hence hindering the progress over time. Current systems allow for manual

entry of ones performance in to an off-line computer either after completing one cycle or piece of equipment or at the completion of an entire work out. This can lead to lost data as well as lack the ability to provide real time feedback to the individual.

5                   The various aspects, features and advantages of the disclosure will become more fully apparent to those having ordinary skill in the art upon careful consideration of the following Detailed Description thereof with the accompanying drawings described below.

## 10                   BRIEF DESCRIPTION OF THE DRAWINGS

The present invention is illustrated by way of example and not limitation in the accompanying figures, in which like references indicate similar elements, and in which:

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FIG. 1 is an exemplary exercise data tracking system.

FIG. 2 is an exemplary circuit block diagram.

FIG. 3 is an exemplary flow diagram of the exercise data management.

20                   FIG. 4 is an exemplary flow diagram of the exercise data management.

25                   Skilled artisans will appreciate that elements in the figures are illustrated for simplicity and clarity and have not necessarily been drawn to scale. For example, the dimensions of some of the elements in the figures may be exaggerated relative to other elements to help to improve understanding of embodiments of the present invention.

## DETAILED DESCRIPTION OF THE DRAWINGS

Before describing in detail the particular exercise data management method and apparatus in accordance with the present invention, it should be observed that the present invention resides primarily in combinations of method steps and apparatus components related thereto. Accordingly, the apparatus components and method steps have been represented where appropriate by conventional symbols in the drawings, showing only those specific details that are pertinent to understanding the present invention so as not to obscure the disclosure with details that will be readily apparent to those of ordinary skill in the art having the benefit of the description herein.

A method and apparatus for the sharing and management of exercise related information is disclosed. The method comprises sending data from a wireless electronic device to an exercise machine, such as a treadmill for example. Data may also be sent from the exercise machine to the wireless electronic device. A display of the device may present the exercises data as the individual is working out.

FIG. 1 illustrates an exemplary exercise data management system wherein a wireless electronic device 102, which is an exemplary cellular radiotelephone in this embodiment, establishes a communication link 104 with an exercise machine 106 through a radio electrically coupled thereto. The exercise machine radio operates in accordance with the wireless electronic device 102. Exercise machine data are exchanged using the communication link 104 as well as personal exercise data collected during the work out by the electronic device or the exercise machine.

In this exemplary embodiment, once the communication link 104 is established between the device 102 and the exercise machine 106, exercise data may be exchanged between the two machines. In one exemplary embodiment, when the communication link 104 is established, the machine will send an exercise machine identification (machine ID) that informs the device 102 of the type of exercise machine the communication link 104 has been established with. The device 102 will compare the exercise machine ID with a machine IDs stored in the device 102 and determine if there is a match. If there is a match and there is machine setup data stored in the device that is associated with the machine ID, the device may transmit the machine setup data to the exercise machine 106. The machine setup data may be a static data set or a dynamic data set that changes as a result of the user's personal fitness data collected during previous or current workout sessions. The personal fitness data may be data such as heart rate, run time, previous changes to machine parameters during the workout and the like.

FIG 2 illustrates an exemplary block diagram of a wireless communication device 200 such as the device 102 of FIG. 1. The wireless communication device 200 described herein is a representation of the type of wireless communication device that may benefit from the present invention. However, it is to be understood that the present invention may be applied to any type of hand-held or portable electronic device including, but not limited to, the following devices: radiotelephones, cordless phones, paging devices, personal digital assistants, portable computers, pen-based or keyboard-based handheld devices, remote control units, portable media players such as an audio player (such as an MP3 player) and the like. Accordingly, any reference

herein to the device 102 should also be considered to apply equally to other hand-held or portable electronic devices.

FIG. 2 illustrates an exemplary circuit block diagram of the exemplary wireless communication device 102 having a controller 204. The controller 204 uses memory 206 comprising RAM 207 and ROM 209 to execute the steps necessary to generate the protocol and to perform other functions for the wireless communication device, such as writing to a display 212, or accepting information from a keypad 214. The memory 206 may also include a SIM card 232. A sensor 224 is coupled to microprocessor 204. Sensor 224 is for sensing a user's physical or biometric condition. The sensor 224 may sense a heart rate or a biometric value associated with the user and related to the user's physical condition during exercise. The sensor 224 may be a plurality of sensors couple to the controller 204 to take multiple measurements that relate to the users personal fitness or biometric condition. The sensor 224 may be physically coupled to the device 102 or may be separate from the device 102 but coupled through a wired or wireless link in order to send data to the controller 204 of the device.

FIG. 2 also shows the transceiver 227 comprising receiver circuitry 228 that is capable of receiving RF signals from at least one bandwidth and optionally more bandwidths. The receiver 228 may comprise a first receiver 229 and a second receiver 231, or one receiver capable of receiving in two or more bandwidths. The receiver 228 depending on the mode of operation may be attuned to receive AMPS, GSM, CDMA, UMTS, WCDMA, Bluetooth, WLAN, such as 802.11 communication signals for example. At least one of the receivers may be capable of receiving the exercise data. Transmitter circuitry 234, is

capable of transmitting RF signals in at least one bandwidth in accordance with the operation modes described above. The transmitter may also include a first transmitter 238 and second transmitter 240 to transmit on two different bandwidths or one transmitter that is capable of transmitting on at least two bands. In one exemplary embodiment, the first bandwidth or set of bandwidths is for communication with a communication system such as a cellular service provider. The second bandwidth or set of bandwidths is for point-to-point communication between the device 102 and the exercise machine 106. If the device 102 is not a radiotelephone but a personal audio player, only one transmitter and receiver may be necessary for establishing the communication link between the device 102 and the exercise machine 106.

The exercise machine 106 will have similar circuitry to the device 102 in order to communicate therewith. The exercise machine circuitry comprises a controller 204 coupled to a transceiver 227 configured to communicate with the transceiver of the device 102. Additionally the exercise machine circuitry 200 may comprise a display 212 and input keys 214 or keypad and memory 206 for machine setup parameters for example. The memory may be comprised of ROM 209, RAM 207, SIM 232. However it is to be understood by one skilled in the art that other memory types may be incorporated for storing data. The controller 204 may control the exercise machine, such as the speed of the treadmill or the presentation of the workout data that is presented to the user such as displaying the speed of the motor that drives the treadmill belt, the calories burned the time characteristics of the workout session and the like. To one skilled in the art it is to be

understood that many parameters and machine functions may be controlled by the controller 204. It is also to be understood that a treadmill is one exercise machine used for exemplary purposes and that the present invention may be applied to a plurality of exercise machines.

FIG. 3 shows a flow diagram of one exemplary embodiment of communications between a device 102 and the exercise machine 106. In step 302 the device 102 and the exercise machine 106 establish the communication link 104. Once the communication link 104 is established the exercise machine 106 sends an exercise machine ID in step 304. The device 102 compares, in step 306, the exercise machine ID received from the exercise machine 106. If the device 102 determines that the exercise machine ID received from the exercise machine 106 matches the exercise machine ID stored in the device 102, then the device 102 determines whether there are setup parameters to be sent to the exercise equipment 106. If there are setup parameters that correspond to the machine ID then the device 102 sends, in step 308 the setup parameters to the exercise machine 106. The exercise machine 106 may utilize the setup parameters sent by the device 102 by prompting the user to accept the setup parameters or not.

In one exemplary embodiment, the communication link 104 is established between the device 102 and the exercise machine 106 and then machine setup data is transmitted from the device 102 to the exercise machine. The exercise machine 106 may then configure operational characteristics using the machine setup data. In this embodiment, the machine settings may only be changed at the exercise machine 106 by the user. Once they are changed at the exercise

machine 106 the exercise machine 106 may transmit the new machine setup data to the device 102.

Once the exercise machine 106 has been setup with or without the transmitted setup parameters, the exercise machine 106 may send exercise data. The device 102, in step 312, receives the exercise data at set intervals. The frequency of the reception by the device 102 or the transmission by the exercise machine 106 may be selected by the user or preprogrammed into either the device 102 or the exercise machine 106.

In step 314, the data received at the device 102 is displayed on the display 211 of the device 102. The data received at the device 102 may be the exercise data from the exercise machine 106 or data received from the sensor or plurality of sensors 224 carried on or coupled to the device 102. The user may select which data is to be displayed on the display 212. The data is also stored, in step 316, in the memory 206 for subsequent use or retrieval by the user.

Exercise data may be stored in the device 102 cumulatively from multiple workout sessions or any physical activity that is received by the device 102. Exercise data received from the exercise machines and the sensors coupled to the device may be combined and stored in a data base which is stored in the memory 209 of the device 102. The database may be a flat file or a relational database or the like. Software, which may be stored and execute by the device 102 or on a separate devices such as a computer, may access the database of exercise data. The software may be used to track the physical performance of the user by computing basic statistics using the exercise data. For example, the user's heart rate may be averaged for each work out session to track

progress over time. The average speed of a jog or distance traveled per jog is another measurement that may be tracked. These performance measurements may also be used to adjust the exercise machine settings cases on an algorithm or the input of a person trainer or the user.

5                   For example, as the user's heart rate improves over time, the jog speed or jog time parameter may be increased in the exercise machine in order to further the progress of the user's physical condition. The software computes, through an algorithm or code segment, a new treadmill speed and stores this in the setup parameter  
10                   file which is to be sent to the treadmill at a subsequent time.

                  The execution of the software may be automatic or initiated by the user. After a workout session, the software may automatically execute and perform the designated functions such as compile the basic statistics associated with the workout, the statistics over multiple  
15                   workouts and may compute the new setup parameters for one or more exercise machines.

                  FIG. 4 is an exemplary process flow illustrating the adjustment of setup parameters of an exercise machine based on personal workout data collected in the device 102. In this exemplary  
20                   embodiment, one biometric parameter is used to set or adjust a parameter of one or more exercise machines. More measurements or biometric conditions may be used as one of ordinary skill in the art will understand. The user's average heart rate is used for exemplary purposes. In step 402, the heart rate average for the last three workout  
25                   sessions are compared by the software, or an algorithm executed by or within the software routine. The device then determines in step 404 if the average heart rate has decreased. If the average heart rate has not

decreased, then in step 406, no change is made to the jog speed. The setup parameter file that is stored on the device 102 in this exemplary embodiment has a field for jog speed. This field is filled with or changed to the new or updated jog speed, in step 408. Another exercise machine may be an elliptical machine which may also have a setup parameter file stored on the device 102. In step 410, the difficulty level is changed in the setup parameter file for the elliptical machine. In step 412, the device 102 determines if a communication link 106 has been established with an exercise machine. Next, in step 414, the device 102 determines the machine ID of the exercise machine and then in step 416, the device 102 sends the setup parameter for the machine with the matching machine ID.

In order to initiate a workout session and the collection of exercise data, the device may automatically determine that a workout has begun, based on the establishment of a communication link 106 as in the above exemplary embodiment, or the user may initiate the data collection by selecting a begin workout option on the device 102.

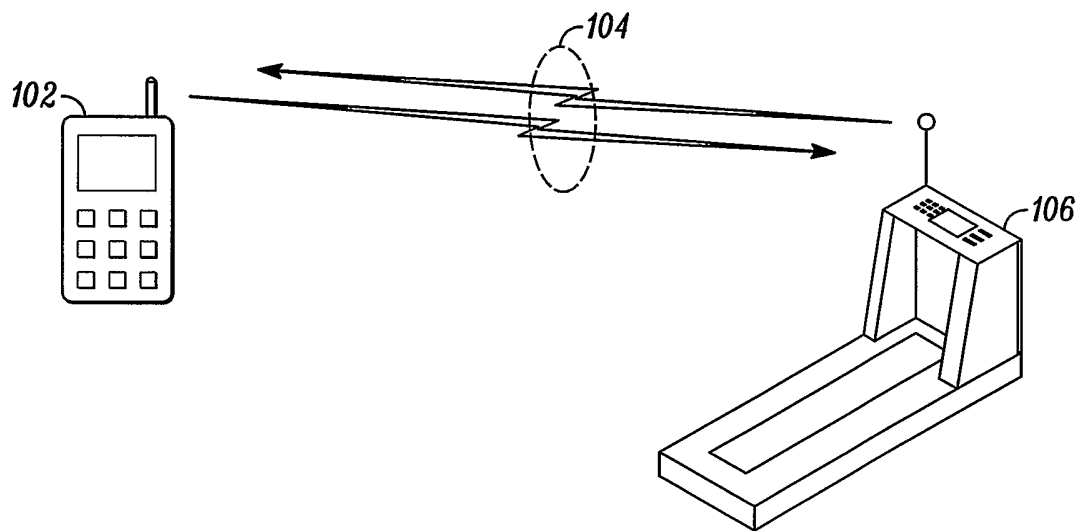
While particular embodiments of the present invention has been shown and described, modifications may be made. It is therefore intended in the appended claims to cover all such changes and modifications which fall within the true spirit and scope of the invention.

## CLAIMS

1. A method in a wireless communication device for exercise data management, the method comprising:  
5 storing exercise data in a wireless communication device wherein the exercise data includes setup parameters;  
determining a change to the setup parameters based on exercise data received by the device; and  
10 sending the setup parameter to an exercise machine wherein the exercise machine utilizes the setup parameters to configure the machine.
- 15 2. The method of claim 1, further comprising compiling summary statistics of personal workout data.
3. The method of claim 2, further comprising computing setup parameters based on summary statistics.
- 20 4. The method of claim 2, further comprising compiling summary statistics of personal workout data from exercise data from multiple workout session.
- 25 5. The method of claim 1, further comprising transmitting machine setting data from said device to an exercise machine via a wireless communication link.

6. A device for exercise data management comprising:  
a transceiver having a transmitter and a receiver;  
a controller coupled to the transceiver;  
a display coupled to the controller; and  
5 an exercise data module coupled to the controller,  
wherein the exercise data module calculates summary statistics of  
received exercise data,  
and generates exercise machine settings for transmission to an exercise  
machine.

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*1/4**FIG. 1*

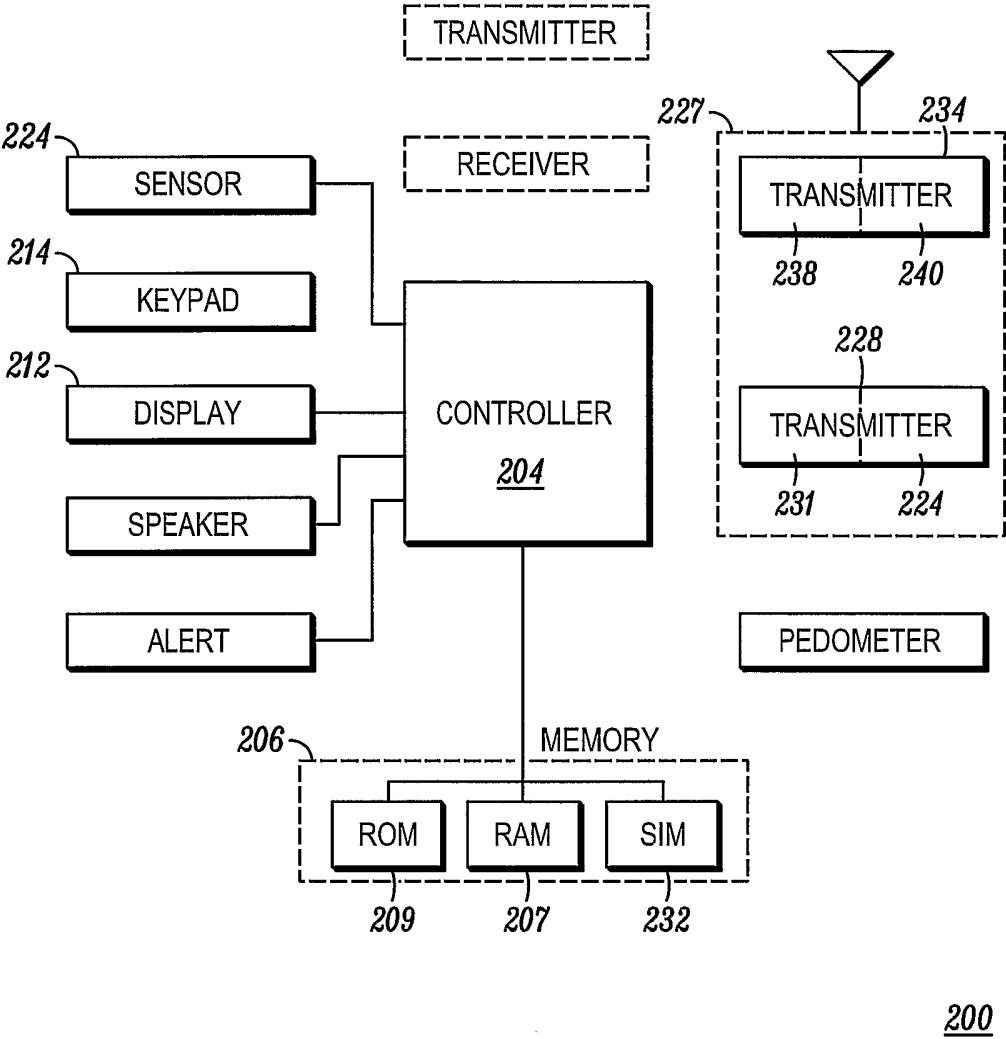


FIG. 2

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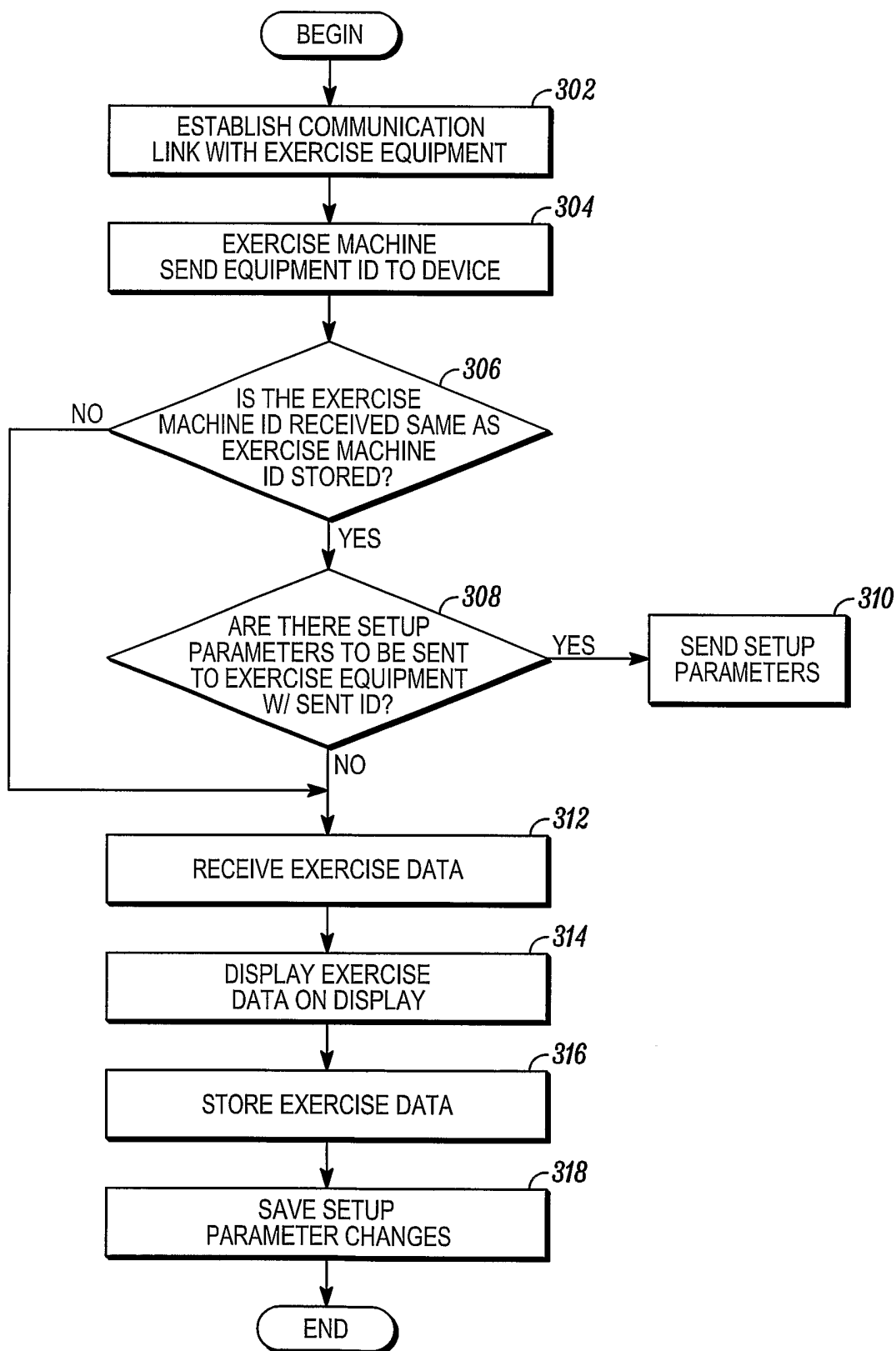


FIG. 3

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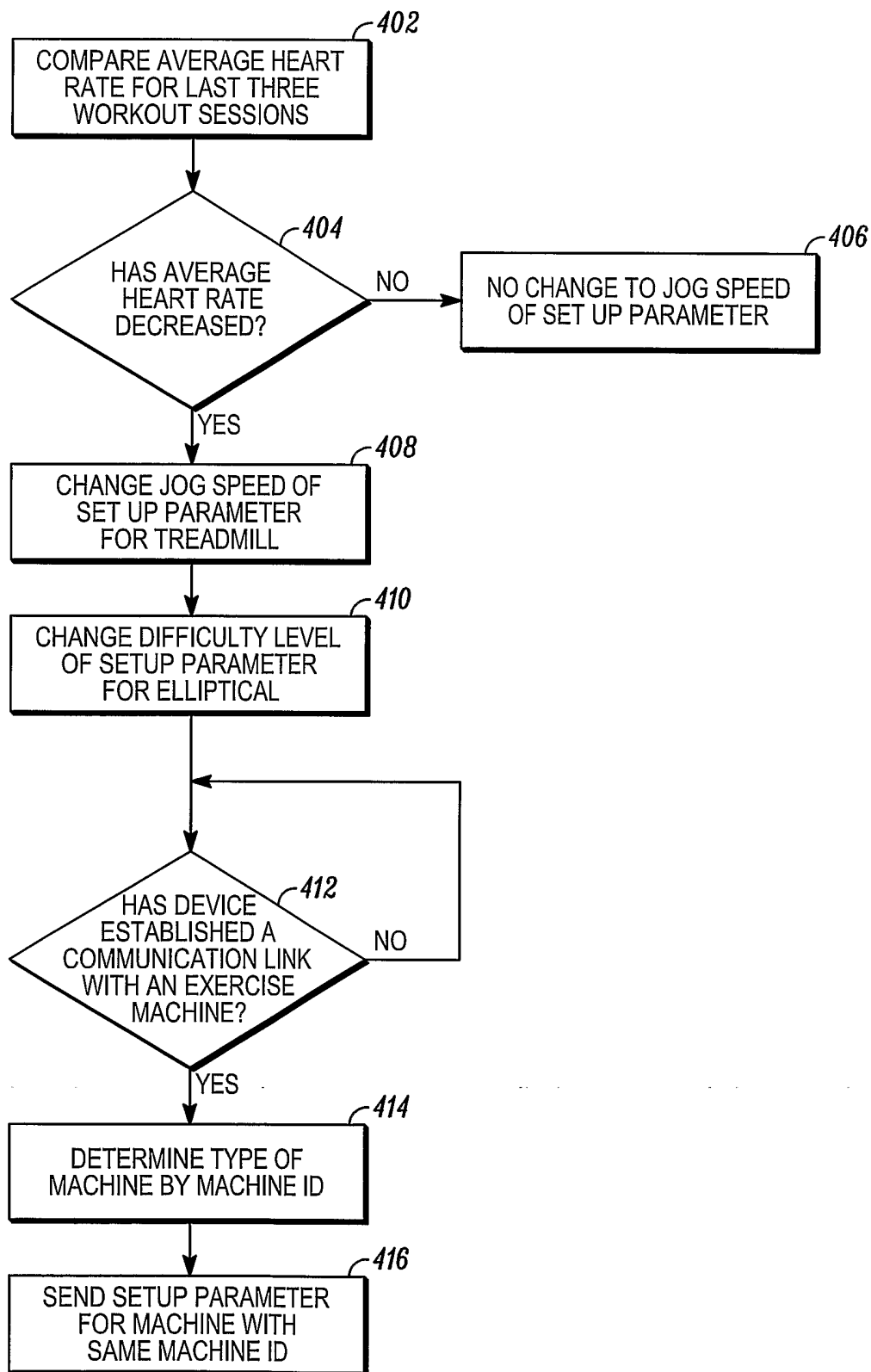


FIG. 4

# INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2005/043201

## A. CLASSIFICATION OF SUBJECT MATTER

A63B24/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
A63B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

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☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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## INTERNATIONAL SEARCH REPORT

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G(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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Information on patent family members

International application No

PCT/US2005/043201

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