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(54) **EXERCISE INFORMATION PROVIDING METHOD AND ELECTRONIC DEVICE SUPPORTING THE SAME**

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(57) **ABSTRACT**

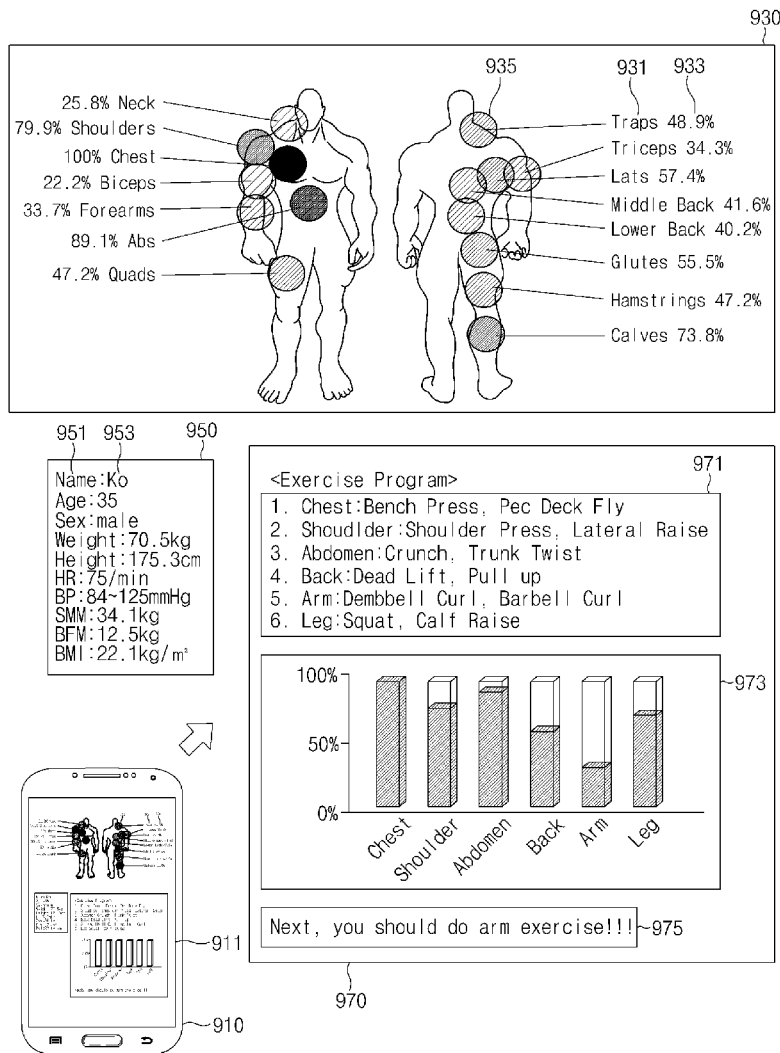
An electronic device and method are disclosed, the electronic device including an output module, a communication module configured to allow communication with at least one of a first electronic device and an external electronic device, and at least one processor, which implements the method, including receiving exercise portion information from a first electronic device, receiving exercise amount information from a second electronic device, and determining exercise information including a respective amount of exercise for each exercise portion based on at least the received exercise portion information and the received exercise amount information, and controlling the output module to output the exercise information.

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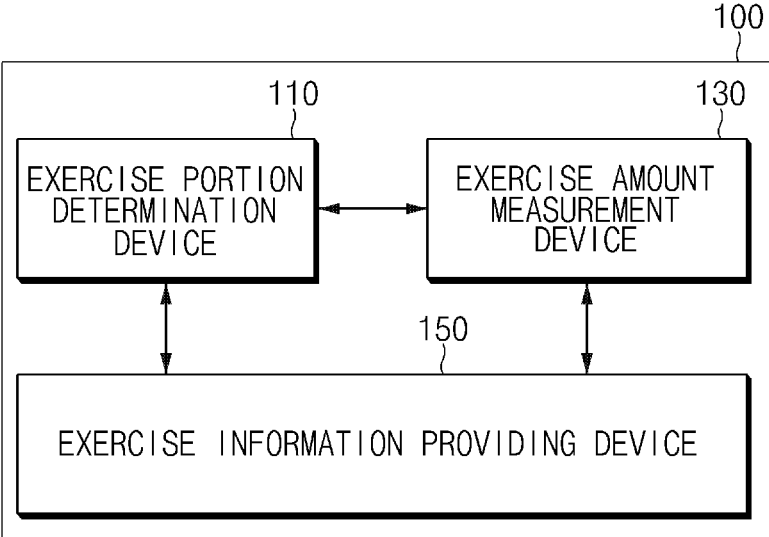


FIG. 1

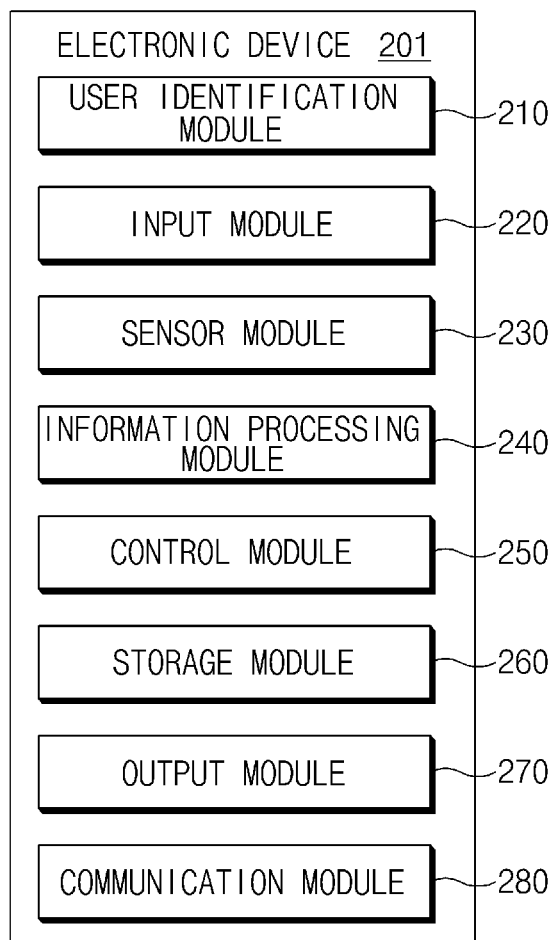


FIG.2

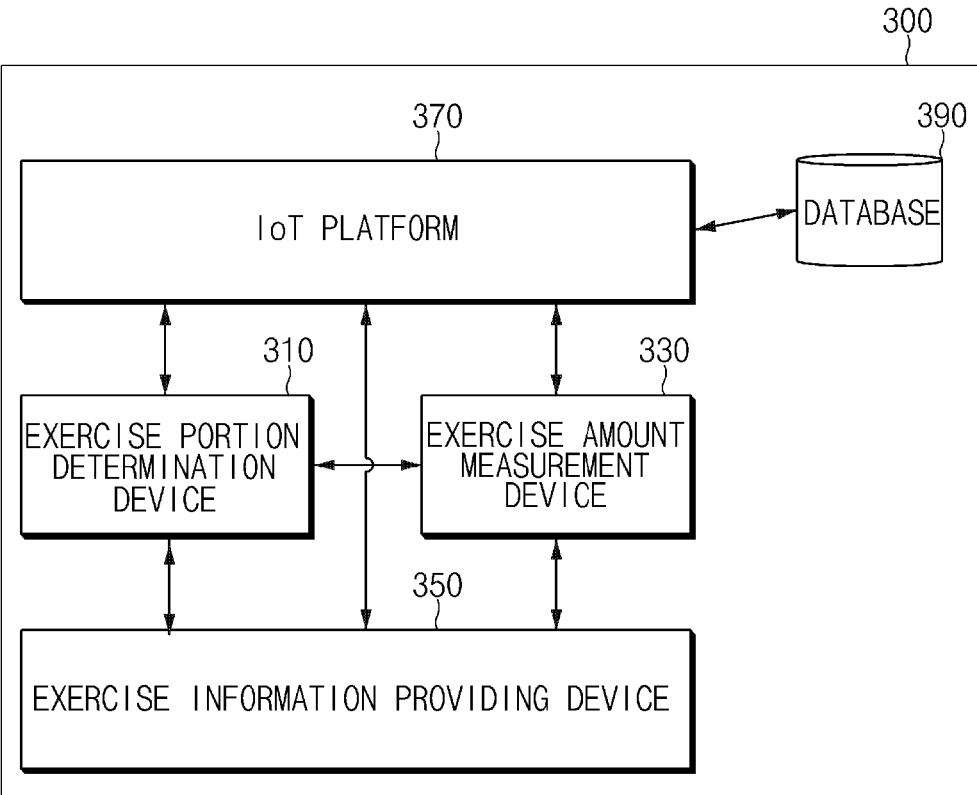


FIG.3

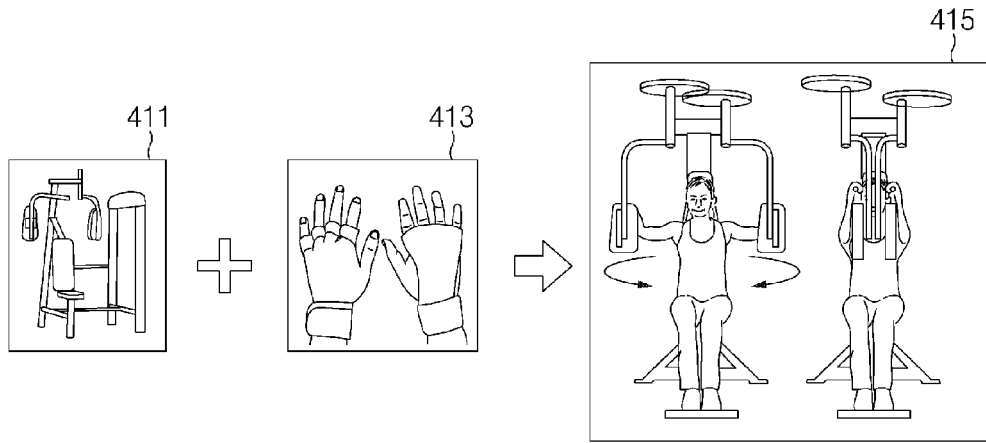


FIG. 4A

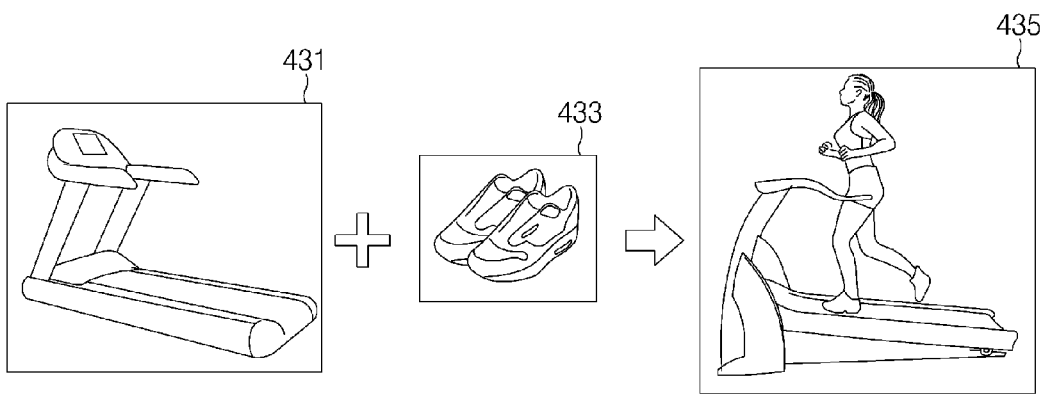


FIG. 4B

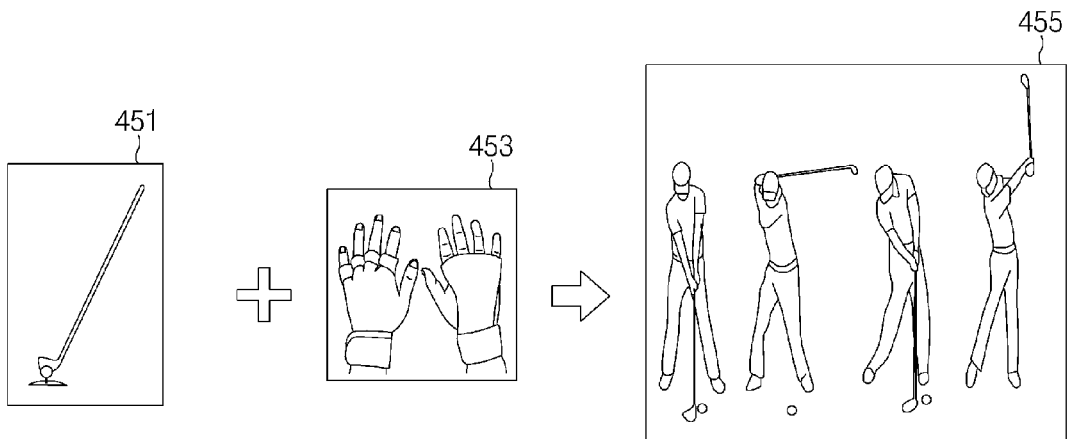


FIG. 4C

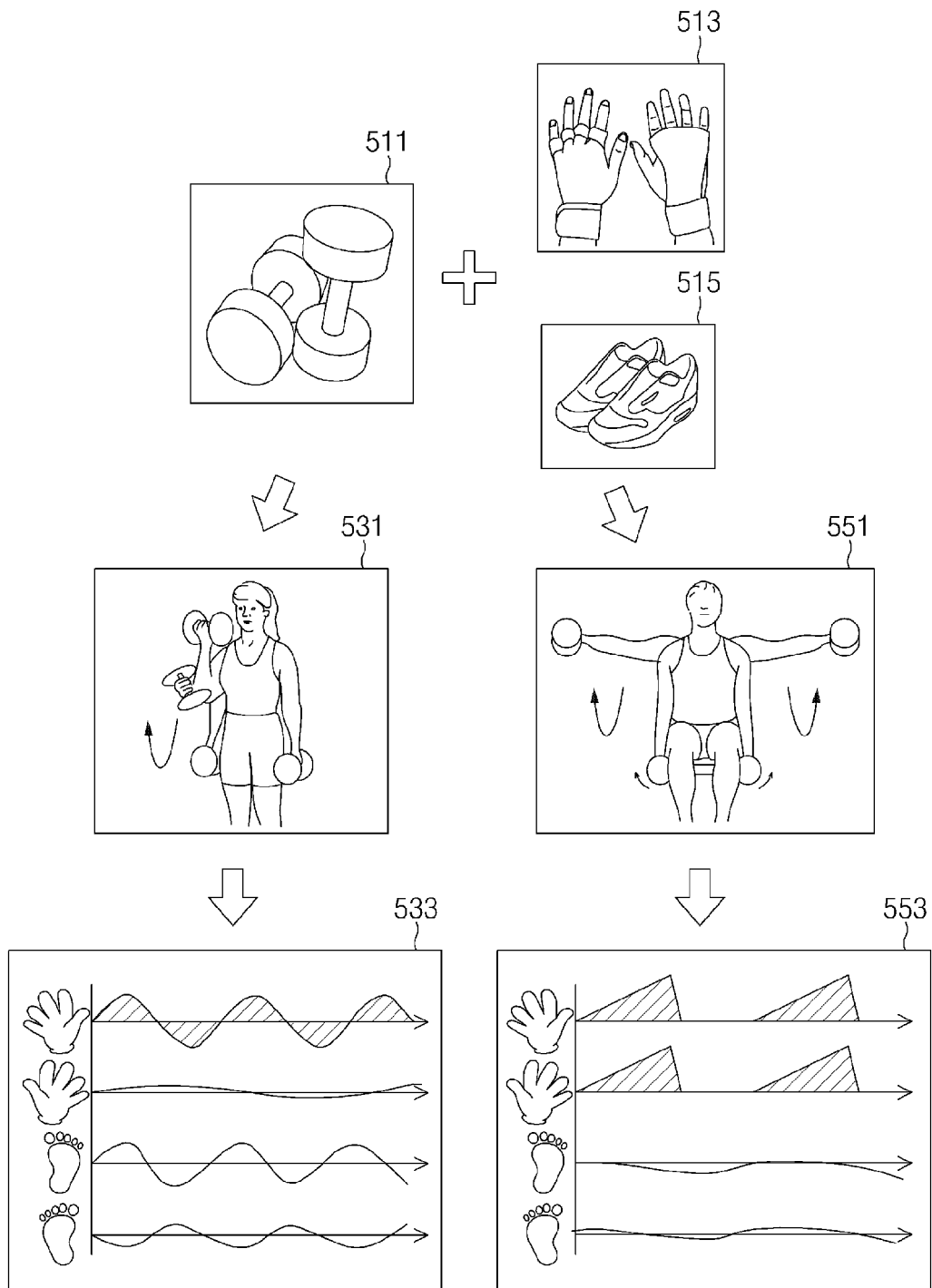


FIG. 5

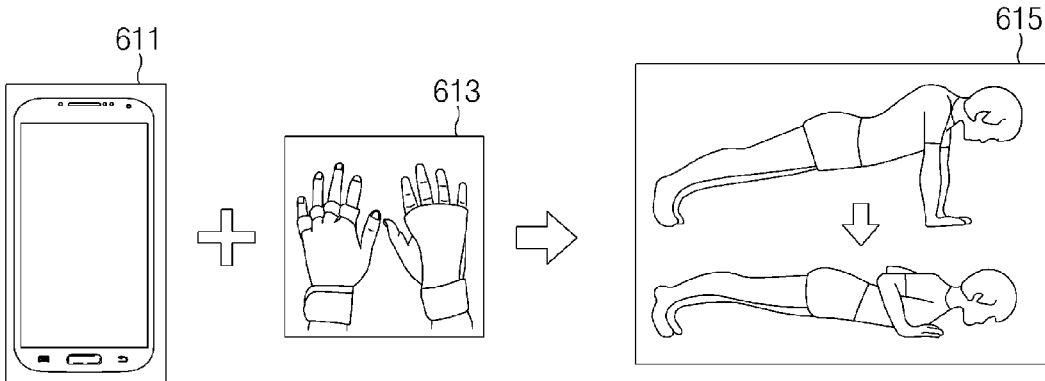


FIG.6

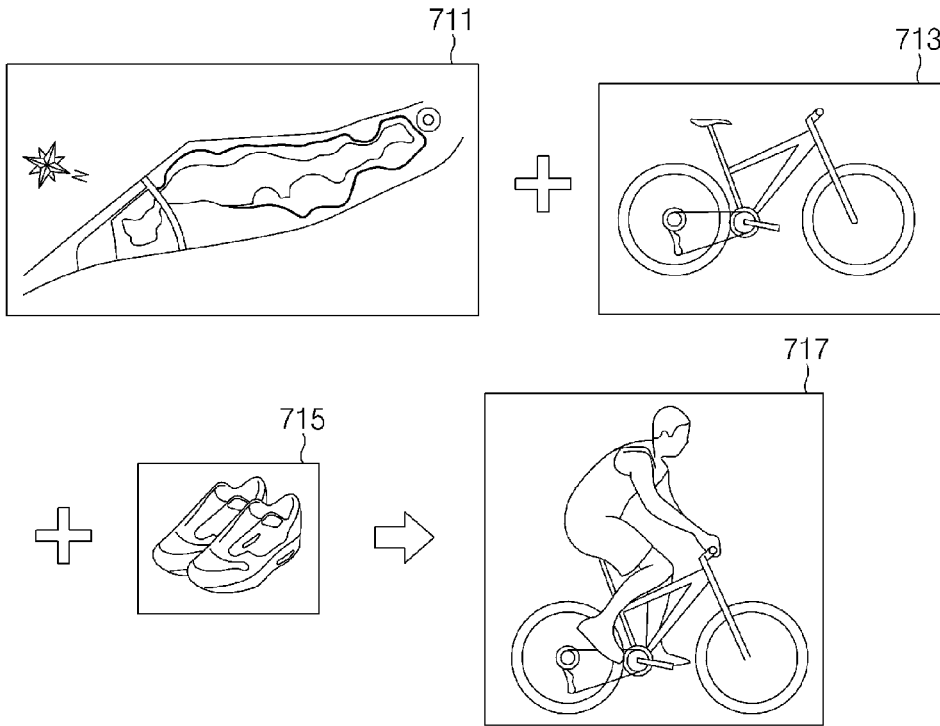


FIG. 7A

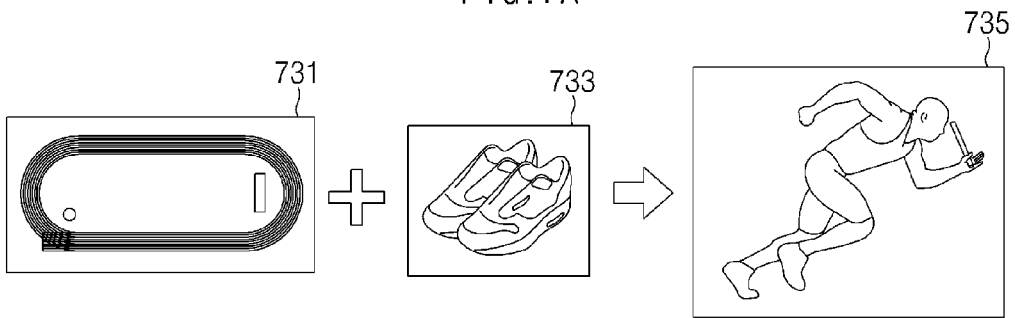


FIG. 7B

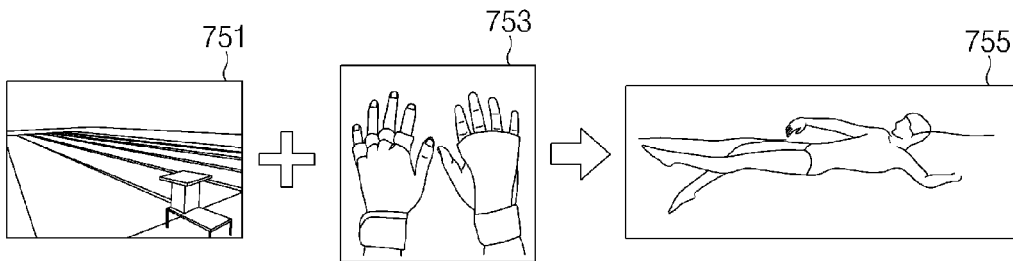


FIG. 7C

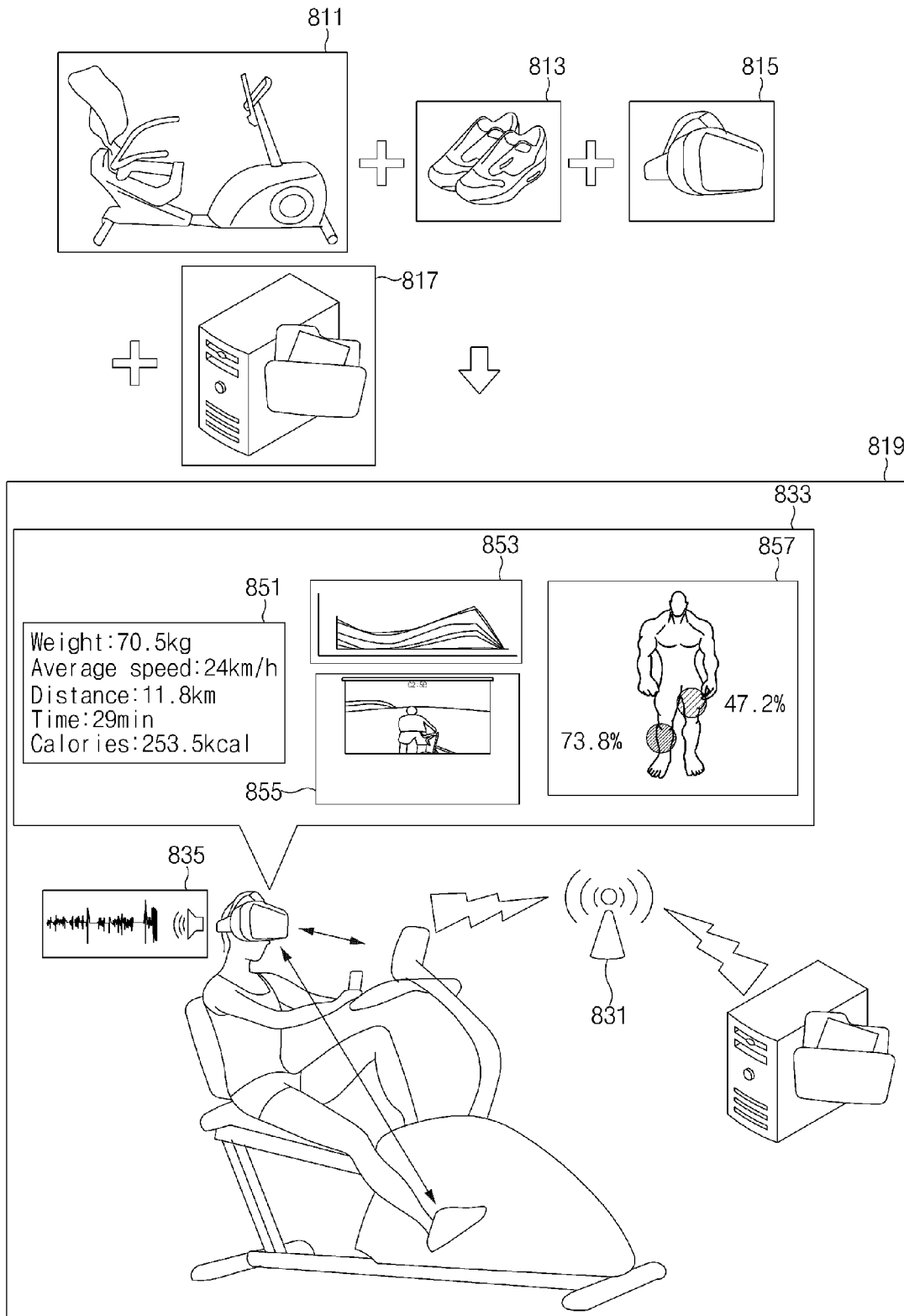


FIG. 8

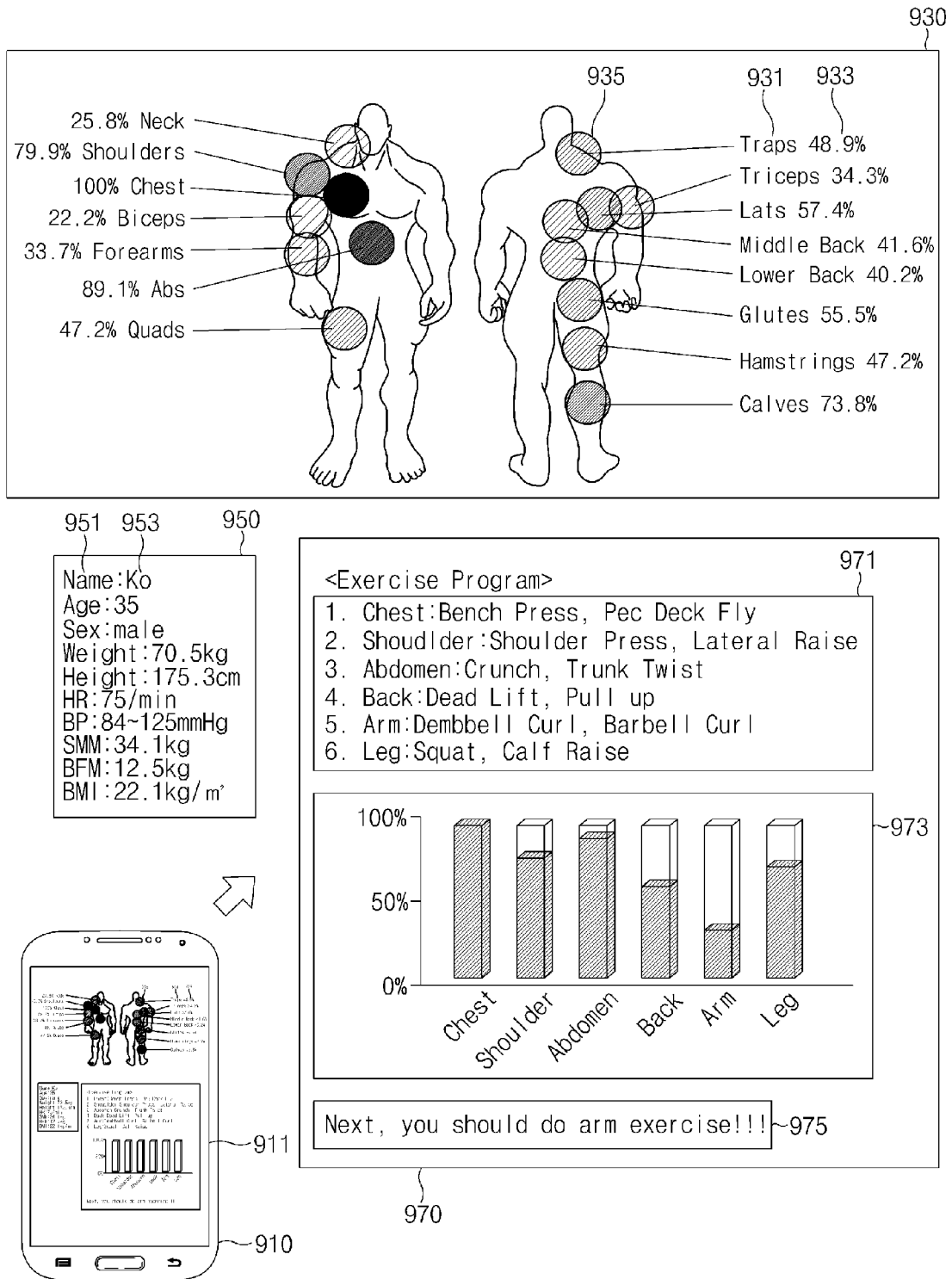


FIG. 9

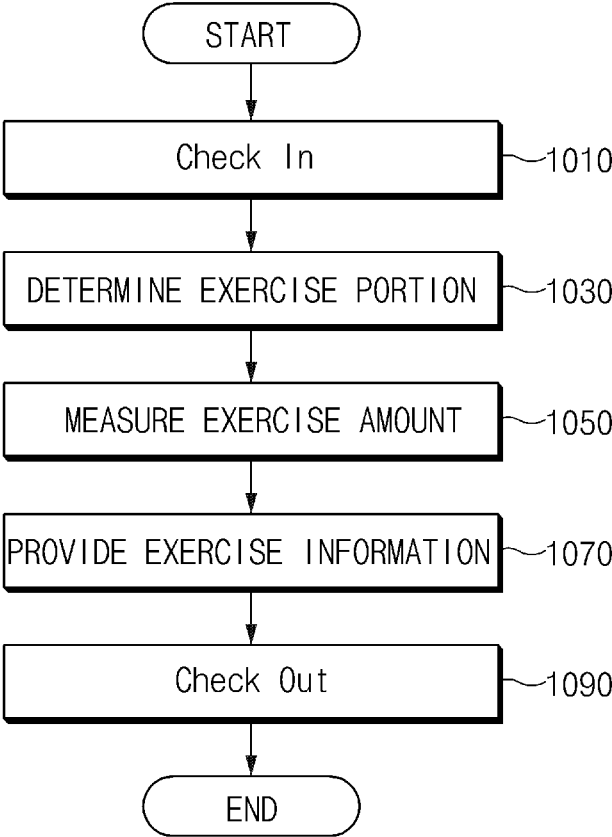


FIG. 10

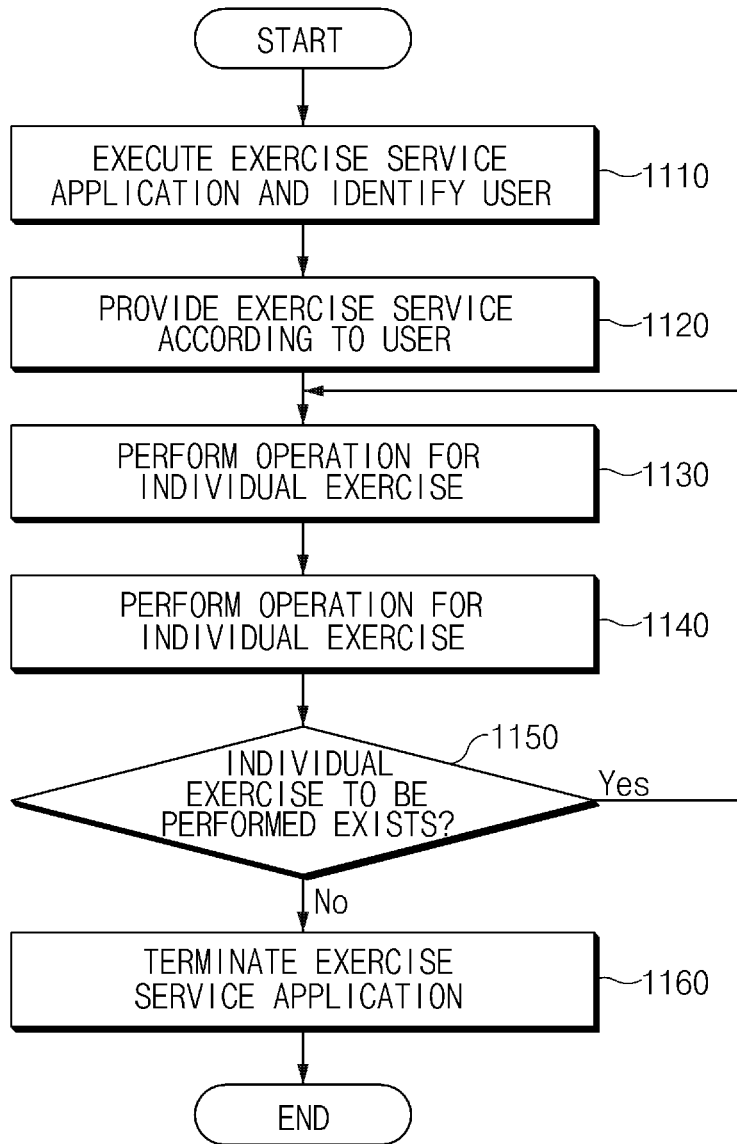


FIG.11

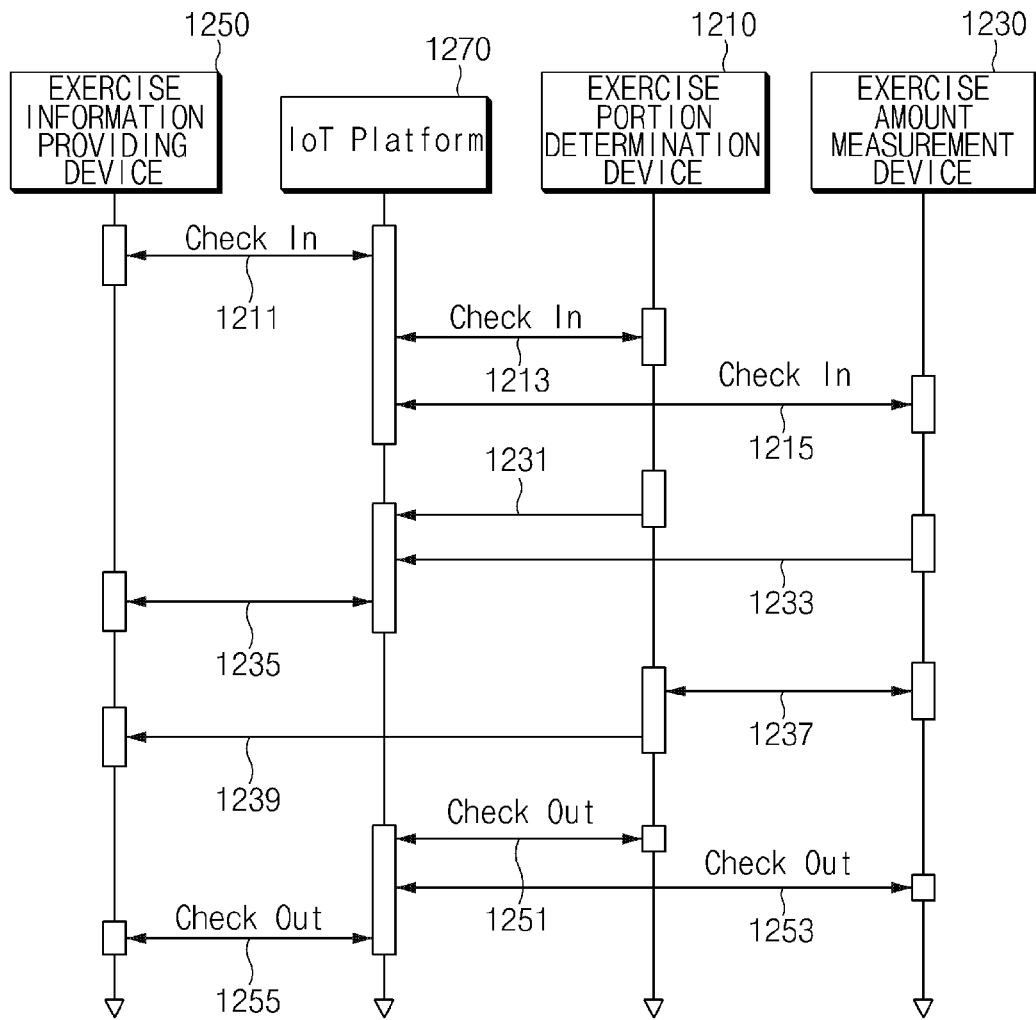


FIG. 12

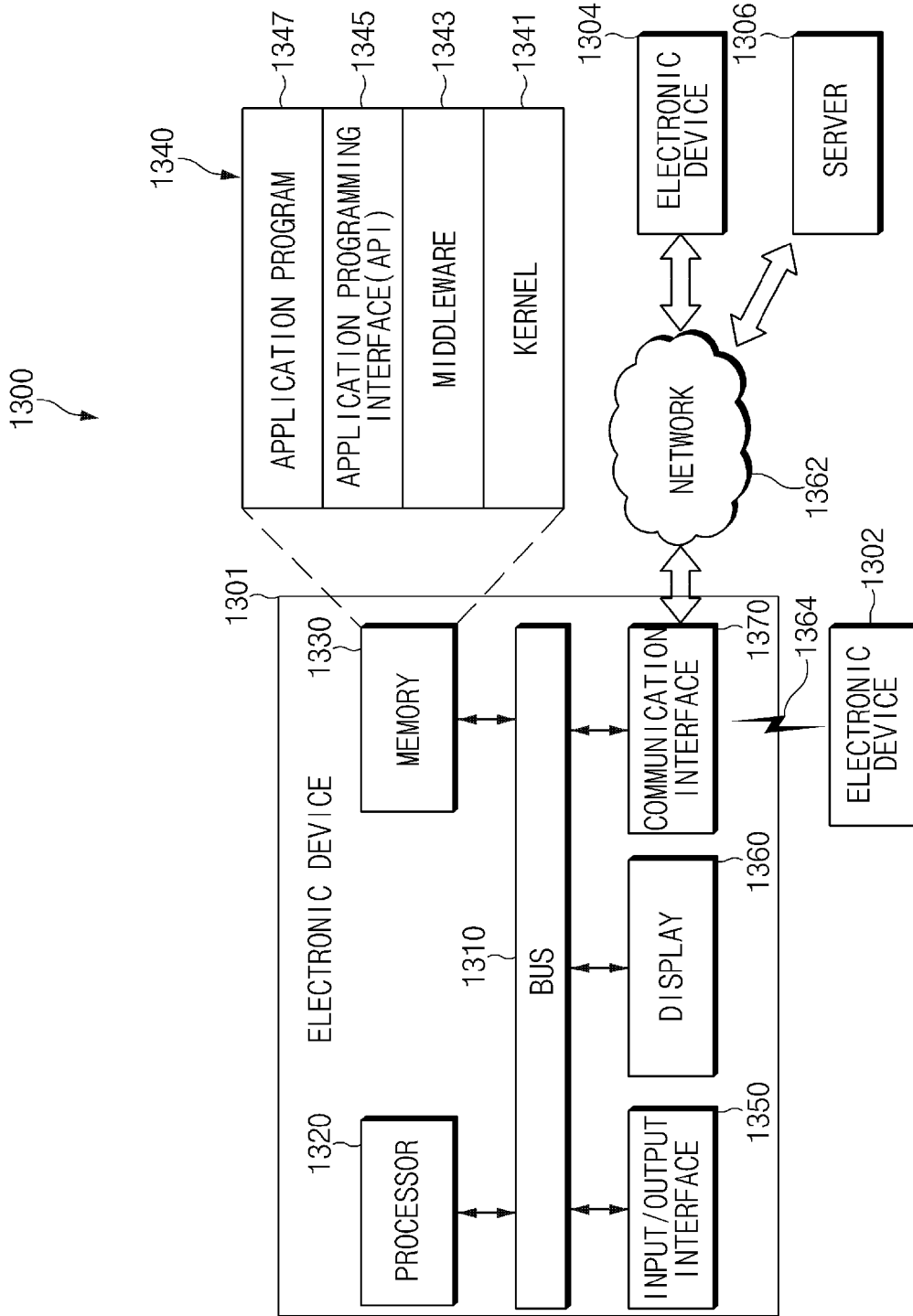


FIG. 13

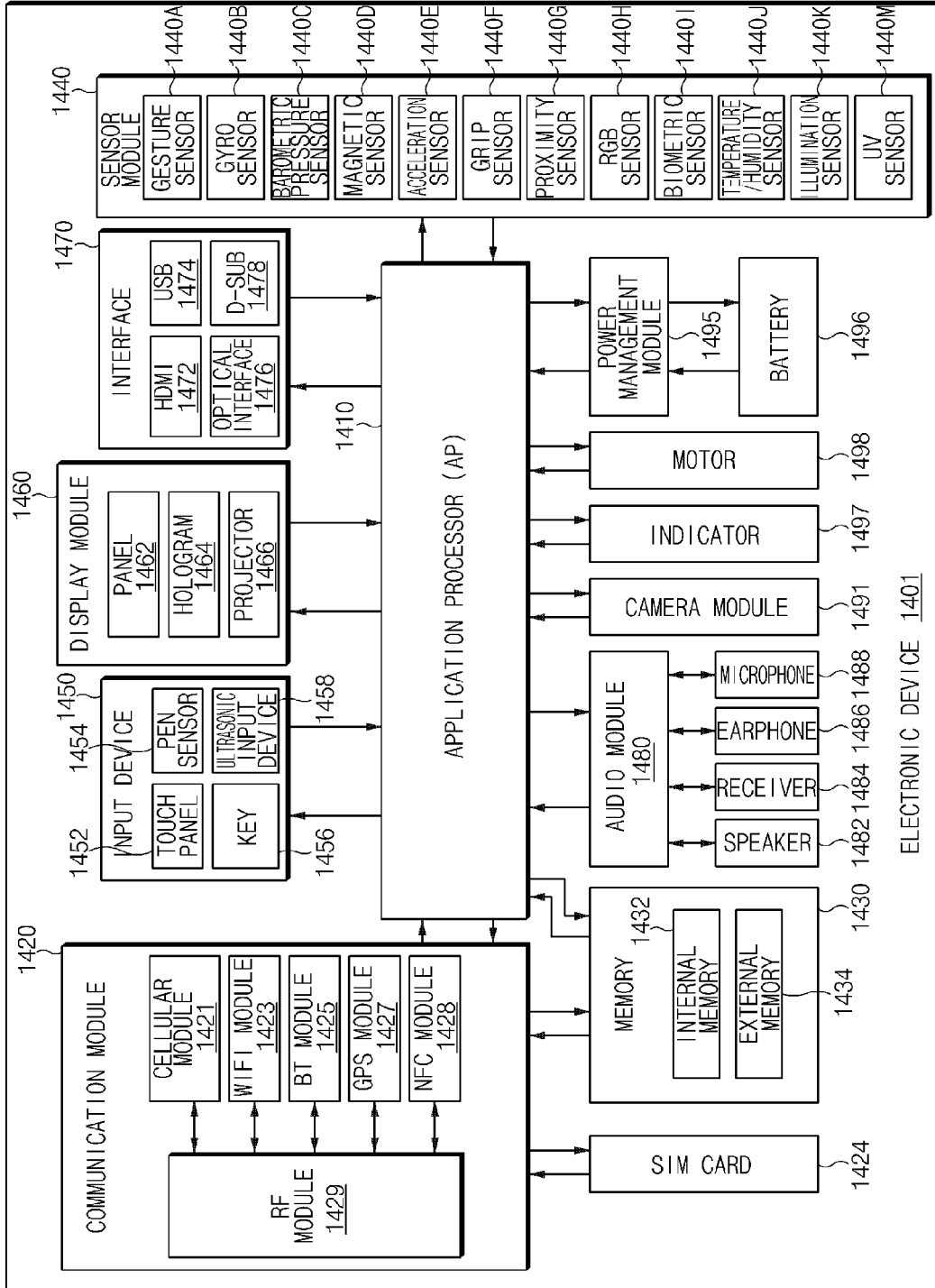


FIG. 14

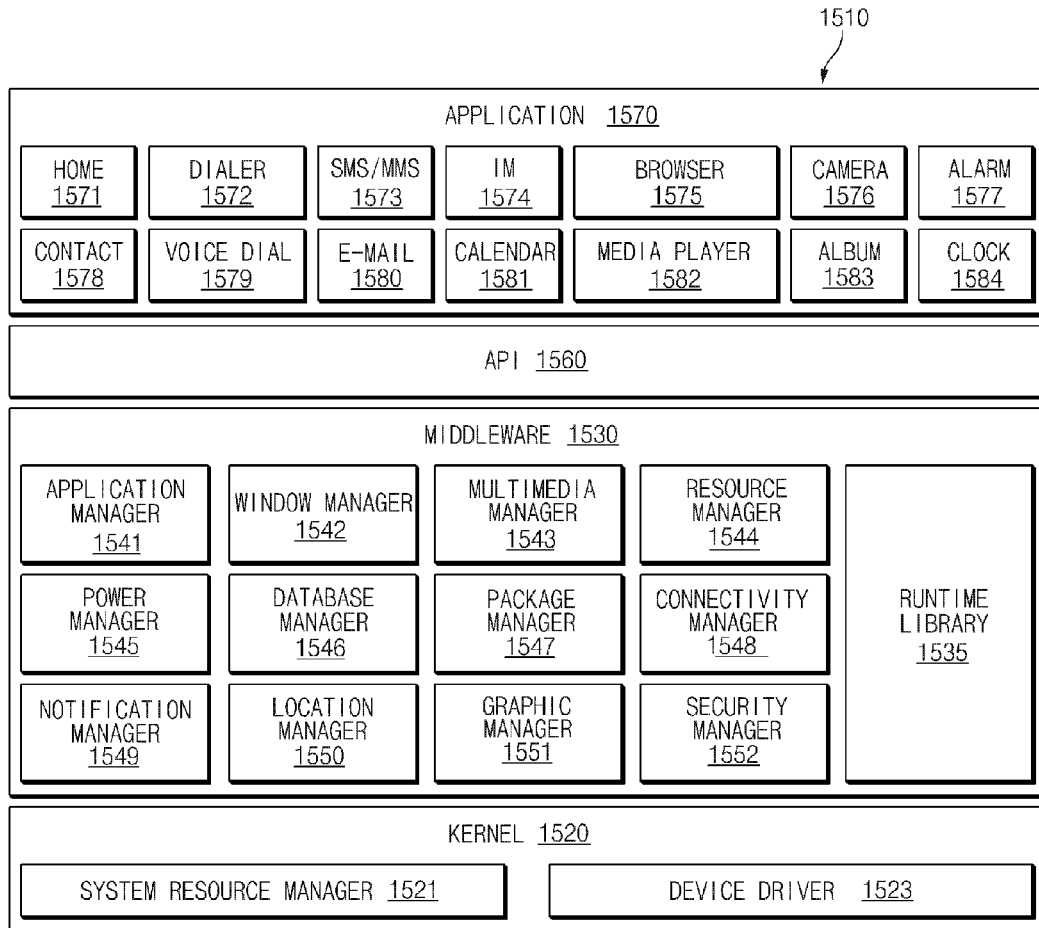


FIG.15

**EXERCISE INFORMATION PROVIDING
METHOD AND ELECTRONIC DEVICE
SUPPORTING THE SAME**

CLAIM OF PRIORITY

[0001] This application claims the benefit under 35 U.S.C. §119(a) of a Korean patent application filed on Nov. 26, 2014 in the Korean Intellectual Property Office and assigned Serial number 10-2014-0166731, the entire disclosure of which is hereby incorporated by reference.

TECHNICAL FIELD

[0002] The present disclosure relates to an exercise information providing method and electronic device implementing the same.

BACKGROUND

[0003] As an interest in health is increased recently, as a method of maintaining good health, an interest in exercise is increased also. According to this trend, demand for exercise based health management service, that is, exercise service, has increased and the number of electronic devices with functions for supporting has correspondingly increased.

[0004] However, electronic devices often collect results in relation to a digital service and provide user information related to the digital service. Additionally, existing electronic devices may not reflect various internal/external conditions because they are executed by user's explicit instructions.

SUMMARY

[0005] Accordingly, an aspect of the present disclosure is to provide a method of integrating and analyzing a variety of information in real time through collaboration between electronic devices and an electronic device supporting the same.

[0006] Another aspect of the present disclosure is to provide a method of integrating and analyzing information by using the so-called "Internet of Things" (IoT) for exchanging information through communication between electronic devices without user's intervention and an electronic device supporting the same.

[0007] In one aspect of the present disclosure, an electronic device is disclosed, including an output module, a communication module configured to allow communication with at least one of a first electronic device and a second electronic device, and at least one processor, configured to receive exercise portion information from the first electronic device, receive exercise amount information from the second electronic device, and determine exercise information including a respective amount of exercise for each exercise portion based on at least the received exercise portion information and the received exercise amount information.

[0008] In another aspect of the present disclosure, a method in an electronic device is disclosed, including receiving via a communication module exercise portion information from a first electronic device, receiving exercise amount information from a second electronic device, determining by at least one processor exercise information including a respective amount of exercise for each exercise portion based on at least the received exercise portion information and the received exercise amount information, and controlling an output module to output the exercise information.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1 is a view illustrating an exercise information providing system according to various embodiments of the present disclosure;

[0010] FIG. 2 is a view illustrating an electronic device in an exercise information providing system according to various embodiments of the present disclosure;

[0011] FIG. 3 is a view illustrating an IoT based exercise information providing system according to various embodiments of the present disclosure;

[0012] FIG. 4A is a first view illustrating an exercise portion determination and exercise amount measurement on the basis of specified information according to various embodiments of the present disclosure;

[0013] FIG. 4B is a second view illustrating an exercise portion determination and an exercise amount measurement on the basis of specified information according to various embodiments of the present disclosure;

[0014] FIG. 4C is a third view illustrating an exercise portion determination and an exercise amount measurement on the basis of specified information according to various embodiments of the present disclosure;

[0015] FIG. 5 is a view illustrating an exercise portion determination and exercise amount measurement on the basis of sensor information according to various embodiments of the present disclosure;

[0016] FIG. 6 is a view illustrating an exercise portion determination and exercise amount measurement on the basis of user input information according to various embodiments of the present disclosure;

[0017] FIG. 7A is a first view illustrating an exercise portion determination and an exercise amount measurement on the basis of a plurality of information according to various embodiments of the present disclosure;

[0018] FIG. 7B is a second view illustrating an exercise portion determination and an exercise amount measurement on the basis of a plurality of information according to various embodiments of the present disclosure;

[0019] FIG. 7C is a third view illustrating an exercise portion determination and an exercise amount measurement on the basis of a plurality of information according to various embodiments of the present disclosure;

[0020] FIG. 8 is a view illustrating an IoT based exercise information providing system according to various embodiments of the present disclosure;

[0021] FIG. 9 is a view illustrating an output screen of an exercise information providing device according to various embodiments of the present disclosure;

[0022] FIG. 10 is a view illustrating a method of operating an exercise information providing system relating to an individual exercise according to various embodiments of the present disclosure;

[0023] FIG. 11 is a view illustrating a method of operating an exercise information providing system relating to exercise service according to various embodiments of the present disclosure;

[0024] FIG. 12 is a view illustrating a method of operating an IoT based exercise information providing system according to various embodiments of the present disclosure;

[0025] FIG. 13 is a view illustrating an electronic device in a network environment according to various embodiments of the present disclosure;

[0026] FIG. 14 is a block diagram illustrating an electronic device according to various embodiments of the present disclosure; and

[0027] FIG. 15 is a block diagram illustrating a program module according to various embodiments of the present disclosure.

DETAILED DESCRIPTION

[0028] Hereinafter, various embodiments of the present disclosure are disclosed with reference to the accompanying drawings. However, this does not limit various embodiments of the present disclosure to a specific embodiment and it should be understood that the present disclosure covers all the modifications, equivalents, and/or alternatives of this disclosure provided they come within the scope of the appended claims and their equivalents. With respect to the descriptions of the drawings, like reference numerals refer to like elements.

[0029] The term “include,” “comprise,” and “have”, or “may include,” or “may comprise” and “may have” used herein indicates disclosed functions, operations, or existence of elements but does not exclude other functions, operations or elements.

[0030] For instance, the expression “A or B”, or “at least one of A or/and B” may indicate include A, B, or both A and B. For instance, the expression “A or B”, or “at least one of A or/and B” may indicate (1) at least one A, (2) at least one B, or (3) both at least one A and at least one B.

[0031] The terms such as “1st”, “2nd”, “first”, “second”, and the like used herein may refer to modifying various different elements of various embodiments of the present disclosure, but do not limit the elements. For instance, “a first user device” and “a second user device” may indicate different users regardless of the order or the importance. For example, a first component may be referred to as a second component and vice versa without departing from the scope of the present disclosure.

[0032] In various embodiments of the present disclosure, it will be understood that when a component (for example, a first component) is referred to as being “(operatively or communicatively) coupled with/to” or “connected to” another component (for example, a second component), the component may be directly connected to the other component or connected through another component (for example, a third component). In various embodiments of the present disclosure, it will be understood that when a component (for example, a first component) is referred to as being “directly connected to” or “directly access” another component (for example, a second component), another component (for example, a third component) does not exist between the component (for example, the first component) and the other component (for example, the second component).

[0033] The expression “configured to” used in various embodiments of the present disclosure may be interchangeably used with “suitable for”, “having the capacity to”, “designed to”, “adapted to”, “made to”, or “capable of according to a situation, for example. The term “configured to” may not necessarily mean “specifically designed to” in terms of hardware. Instead, the expression “a device configured to” in some situations may mean that the device and another device or part are “capable of”. For example, “a processor configured to perform A, B, and C” in a phrase may mean a dedicated processor (for example, an embedded processor) for performing a corresponding operation or a

generic-purpose processor (for example, a CPU or application processor) for performing corresponding operations by executing at least one software program stored in a memory device.

[0034] Terms used in various embodiments of the present disclosure are used to describe specific embodiments of the present disclosure, and are not intended to limit the scope of other embodiments. The terms of a singular form may include plural forms unless they have a clearly different meaning in the context. Otherwise indicated herein, all the terms used herein, which include technical or scientific terms, may have the same meaning that is generally understood by a person skilled in the art. In general, the terms defined in the dictionary should be considered to have the same meaning as the contextual meaning of the related art, and, unless clearly defined herein, should not be understood abnormally or as having an excessively formal meaning. In any cases, even the terms defined in this specification cannot be interpreted as excluding embodiments of the present disclosure.

[0035] According to various embodiments of the present disclosure, electronic devices may include at least one of smartphones, tablet personal computers (PCs), mobile phones, video phones, electronic book (e-book) readers, desktop personal computers (PCs), laptop personal computers (PCs), netbook computers, workstation server, personal digital assistants (PDAs), portable multimedia player (PMPs), MP3 players, mobile medical devices, cameras, and wearable devices (for example, smart glasses, head-mounted-devices (HMDs), electronic apparel, electronic bracelets, electronic necklaces, electronic accessories, electronic tattoos, smart mirrors, and smart watches).

[0036] According to some embodiments of the present disclosure, an electronic device may be smart home appliances. The smart home appliances may include at least one of, for example, televisions, digital video disk (DVD) players, audios, refrigerators, air conditioners, cleaners, ovens, microwave ovens, washing machines, air cleaners, set-top boxes, home automation control panels, security control panels, TV boxes (e.g., Samsung HomeSync™, Apple TV™ or Google TV™), game consoles (for example, Xbox™ and PlayStation™), electronic dictionaries, electronic keys, camcorders, and electronic picture frames.

[0037] According to some embodiments of the present disclosure, an electronic device may include at least one of various medical devices supporting call forwarding service (for example, various portable measurement devices (for example, glucometers, heart rate meters, blood pressure meters, temperature meters, etc.), magnetic resonance angiography (MRA) devices, magnetic resonance imaging (MRI) devices, computed tomography (CT) devices, medical imaging devices, ultrasonic devices, etc.), navigation devices, global positioning system (GPS) receivers, event data recorders (EDRs), flight data recorders (FDRs), vehicle infotainment devices, marine electronic equipment (for example, marine navigation systems, gyro compasses, etc.), avionics, security equipment, vehicle head units, industrial or household robots, financial institutions' automatic teller's machines (ATMs), or stores' point of sales (POS) or internet of things (for example, bulbs, various sensors, electric or gas meters, sprinkler systems, fire alarms, thermostats, street lights, toasters, exercise equipment, hot water tanks, heaters, boilers, etc.).

[0038] In various embodiments of the present disclosure, an electronic device may include at least one of part of furni-

ture or buildings/structures supporting call forwarding service, electronic boards, electronic signature receiving devices, projectors, and various measuring instruments (for example, water, electricity, gas, or radio signal measuring instruments). An electronic device according to various embodiments of the present disclosure may be one of the above-mentioned various devices or a combination thereof. Additionally, an electronic device according to an embodiment of the present disclosure may be a flexible electronic device. Additionally, an electronic device according to an embodiment of the present disclosure is not limited to the above-mentioned devices and may include a new kind of an electronic device according to the technology development.

[0039] Hereinafter, an electronic device according to various embodiments of the present disclosure will be described in more detail with reference to the accompanying drawings. The term “user” in this disclosure may refer to a person using an electronic device or a device using an electronic device (for example, an artificial intelligent electronic device).

[0040] FIG. 1 is a view illustrating an exercise information providing system according to various embodiments of the present disclosure.

[0041] Referring to FIG. 1, an exercise information providing system 100 according to various embodiments of the present disclosure may include an exercise portion determination device 110, an exercise amount measurement device 130, and an exercise information providing device 150.

[0042] The exercise portion determination device 110 may perform a function for determining a body portion that is actually used during a specific exercise, for example, an exercise portion (or the type of a muscle or a muscle group). According to an embodiment of the present disclosure, the exercise portion determination device 110 may determine an exercise portion on the basis of at least one of specified information indicating at least expected a part of a muscle group affected by an exercise performed by a user, sensor information, and user input information. For example, the exercise portion determination device 110 may determine an exercise portion on the basis of at least one of exercise portion information preloaded to an exercise device, sensor information received from a sensor module included in an exercise device (or an exercise auxiliary device, such as, for example, a wearable exercise device), and information inputted by a user.

[0043] According to various embodiments of the present disclosure, the exercise portion determination device 110 may be a health device design to exercise a specified exercise portion or an electronic device included in the exercise device. For example, the exercise portion determination device 110 may be an exercise device equipped in a fitness center, for example, a fly pec deck machine. In this case, an exercise portion exercisable by an exercise device may be a chest portion (or a pectoralis major portion) and a corresponding exercise device may have a chest portion (or the pectoralis major portion) as specified exercise portion information.

[0044] According to various embodiments of the present disclosure, the exercise portion determination device 110 may be an exercise device or an exercise auxiliary device, which includes a sensor module, or an electronic device included in an exercise device or an exercise auxiliary device. For example, the exercise portion determination device 110 may be a dumbbell including a gyro sensor or an acceleration sensor. In this case, the exercise portion determination device

110 may determine an exercise portion on the basis of a measurement value (for example, sensor information) of the sensor corresponding to a position change of a dumbbell, which occurs when a user exercise by using the dumbbell. For example, when a user perform an alternated dumbbell curl exercise by using a dumbbell, the exercise portion determination device 110 may determine an arm portion (or a biceps portion) as exercise portion information on the basis of a measurement value of the sensor. According to an embodiment of the present disclosure, in order to determine an exercise portion on the basis of sensor information, the exercise portion determination device 110 may collect various patterns of sensor a measurement value according to an operation of a typical exercise method from a storage module included in the exercise portion determination device 110 or an external electronic device connected to the exercise portion determination device 110 through wired/wireless communication.

[0045] According to various embodiments of the present disclosure, the exercise portion determination device 110 may be connected to an exercise device or an exercise auxiliary device, which includes a sensor module, through wired/wireless communication. For example, the exercise portion determination device 110 may be a smartphone connected to a dumbbell including a gyro sensor or an acceleration sensor through Bluetooth. In this case, the exercise portion determination device 110 may determine an exercise portion by receiving sensor information from a dumbbell connected through Bluetooth.

[0046] According to various embodiments of the present disclosure, the exercise portion determination device 110 may be an electronic device including an input device. For example, the exercise portion determination device 110 may be a smartphone including a touch panel. In this case, the exercise portion determination device 110 may determine a corresponding exercise portion by receiving the type of an exercise that a user is to perform or the name of an exercise from the user. For example, when a user inputs a pushup exercise, the exercise portion determination device 110 may determine a chest portion (or a pectoralis major portion) as an exercise portion on the basis of user input information. According to an embodiment of the present disclosure, the exercise portion determination device 110 may collect information on an exercise portion corresponding to various exercises from a storage module included in the exercise portion determination device 110 or an external electronic device connected to the exercise portion determination device 110 through wired/wireless communication.

[0047] According to various embodiments of the present disclosure, the exercise portion determination device 110 may determine an exercise portion on the basis of a plurality of information among specified information, sensor information, and user input information. For example, when a user swims while wearing a glove having a sensor attached, the exercise portion determination device 110 may receive information (for example, information on an exercise type (for example, swimming) from an arbitrary electronic device installed at an entrance or a near location of a swimming pool or an arbitrary electronic device installed at the glove. Additionally, the exercise portion determination device 110 may receive sensor information corresponding to a user's movement (for example, an exercise motion) through a sensor installed at the swimming pool or a sensor installed at the glove. In this case, the exercise portion determination device

110 may include patterns for a corresponding exercise type, for example, swimming, in an analysis target among patterns of sensor measurement values according to various exercises on the basis of specified information and may determine an exercise motion that a user performs, for example, a swimming style, among the patterns on the basis of sensor information. Additionally, the exercise portion determination device **110** may determine an exercise portion corresponding to a swimming style.

[0048] According to various embodiments of the present disclosure, the exercise portion determination device **110** may receive exercise type related information from an electronic device installed at an exercise place (for example, a swimming pool), an electronic device disposed at an exercise device, or an electronic device disposed at an exercise auxiliary device. Alternatively, the exercise portion determination device **110** may determine an exercise portion according to a specified exercise type or pattern through a pattern analysis of sensor information measured by a sensor included in an exercise place, an exercise device, or an exercise auxiliary device.

[0049] The exercise amount measurement device **130** may perform a function for measuring an exercise amount performed during a specific exercise. According to an embodiment of the present disclosure, the exercise amount measurement device **130** may measure an exercise amount on the basis of sensor information received from a sensor module included in an exercise place, an exercise device or and an exercise auxiliary device. Alternatively, the exercise amount measurement device **130** may be configured in a form of being included in an exercise place, an exercise device or and an exercise auxiliary device, as including a sensor module for measuring an exercise amount, or the exercise amount measurement device **130** itself may be an exercise place, an exercise device or and an exercise auxiliary device.

[0050] In relation to this, the exercise amount measurement device **130** may collect user's body information in order to measure a more accurate exercise amount. For example, the exercise amount measurement device **130** may collect information such as the user's age, sex, weight, or height. According to an embodiment of the present disclosure, the exercise amount measurement device **130** may collect user's body information from a user through an input device or from an external electronic device connected through wired/wireless communication. Alternatively, the exercise amount measurement device **130** may measure user's body information through a sensor module. For example, the user's weight may be measured through a pressure sensor attached to sports shoes. Alternatively, the exercise amount measurement device **130** may additionally measure user's body information such as the user's blood pressure, heart rate, muscle volume, body fat, or body mass index through a sensor module.

[0051] According to various embodiments of the present disclosure, the exercise amount measurement device **130** may measure an exercise amount on the basis of user's body information and a physical amount corresponding to sensor information received from a sensor module, for example, pressure, distance, time, speed, or acceleration. Additionally, the exercise amount measurement device **130** may measure calories consumed during a specific exercise on the basis of a measured exercise amount or received sensor information. According to an embodiment of the present disclosure, in relation to an exercise amount measurement, the sensor module may include a pressure sensor, or an acceleration sensor.

According to an embodiment of the present disclosure, in relation to a function for measuring additional information such as blood pressure and heart rate, the sensor module may include a heart rate sensor or a biometric sensor.

[0052] The exercise information providing device **150** may perform a function for receiving information from the exercise portion determination device **110** and the exercise amount measurement device **130** and providing exercise information to a user. According to an embodiment of the present disclosure, the exercise information providing device **150** may provide to a user an exercise amount (for example, a muscle specific exercise amount) of an exercise portion a user actually uses during a specific exercise through an output device on the basis of an exercise portion determined through the exercise portion determination device **110** and an exercise amount measured through the exercise amount measurement device **130**.

[0053] According to various embodiments of the present disclosure, the exercise information providing device **150** may provide user's body information or exercise detail information to a user. For example, when a user performs a specific exercise, as soon as performing an exercise or terminating an exercise, the exercise information providing device **150** may output to an output device (for example, a speaker, an earphone, or a display) the information corresponding to user's body information (for example, the user's age, sex, weight, height, blood pressure, heart rate, muscle volume, body fat, or body mass index) or exercise detail information (for example, an exercise portion corresponding to a performed exercise, an exercise amount, an exercise portion specific exercise amount, an exercise type, an exercise name, an exercise intensity, an exercise frequency, an exercise time, a calorie consumption amount, an exercise portion specific exercise amount target value, or an exercise portion specific exercise amount remaining value).

[0054] Although it is described above that the exercise information providing device **150** has a form configured separated from the exercise portion determination device **110** and the exercise amount measurement device **130**, according to an embodiment of the present disclosure, the exercise information providing device **150** may be configured in a form of being included in the exercise portion determination device **110** or the exercise amount measurement device **130**. Additionally, the exercise information providing system **100** may be configured in a form of including a plurality of at least one of the components (for example, the exercise portion determination device **110**, the exercise amount measurement device **130**, and the exercise information providing device **150**).

[0055] FIG. 2 is a view illustrating an electronic device in an exercise information providing system according to various embodiments of the present disclosure. An electronic device **201** may have the same or similar configuration to the exercise portion determination device **110**, the exercise amount measurement device **130**, and the exercise information providing device **150**, which are included in the exercise information providing system **100** shown in FIG. 1.

[0056] Referring to FIG. 2, the electronic device **201** according to various embodiments of the present disclosure may include a user identification module **210**, an input module **220**, a sensor module **230**, an information processing module **240**, a control module **250**, a storage module **260**, an output module **270**, and a communication module **280**. According to various embodiments of the present disclosure,

the electronic device **201** may omit at least one of components or may additionally include another component according to a function (for example, an exercise portion determination function, an exercise amount measurement function, or an exercise information providing function) of the electronic device **201**.

[0057] When a user directly uses the electronic device **201** or a function included in the electronic device **201**, the user identification module **210** may perform a function for identifying a user. According to an embodiment of the present disclosure, the user identification module **210** may identify a user on the basis of user identification information (for example, a user name, a user identification number, or a user code) inputted from a user through the input module **220**, biometric information (for example, a user fingerprint, and so on) measured through the sensor module **230**, or user identification information received from an external electronic device through the communication module **280**. According to an embodiment of the present disclosure, the user identification module **210** may process to store user identification information corresponding to the identified user through the storage module **260**.

[0058] The input module **220** may perform a function for receiving an input from a user. According to an embodiment of the present disclosure, the input module **220** may receive user identification information, user's body information, or the type or name of an exercise that a user is to perform, from a user. Additionally, the input module **220** may receive a user's input in relation to an exercise service that an exercise information providing system (for example, the exercise information providing system **100** of FIG. **1**) provides. The exercise service may be an exercise based health management service that comprehensively provides the type, name, intensity, frequency, time, or order of an exercise that a user performs.

[0059] The sensor module **230** may perform a function for measuring a physical amount or detecting an operating state of the electronic device **201**. The sensor module **230** may include a pressure sensor, a gyro sensor, an acceleration sensor, a heart rate sensor, a biometric sensor, an iris sensor, a fingerprint sensor, or a proximity sensor. According to an embodiment of the present disclosure, the sensor module **230** may detect whether there is an approaching object or an object existing at a close location through a proximity sensor or may measure biometric information for identifying a user through an iris sensor or a fingerprint sensor. Additionally, the sensor module **230** may measure a physical amount for determining an exercise portion through a gyro sensor or an acceleration sensor or may measure a physical amount for measuring an exercise amount through a pressure sensor or an acceleration sensor. Additionally, the sensor module **230** may measure biometric information such as blood pressure and heart rate through a heart rate sensor or a biometric sensor.

[0060] The information processing module **240** may process to perform a function included in the electronic device **201** on the basis of user identification information identified through the user identification module **210**, user input information received through the input module **220**, sensor information (for example, a physical amount) measured through the sensor module **230**. For example, the information processing module **240** may perform an exercise portion determination function, an exercise amount measurement function, or

an exercise information providing function on the basis of the user identification information, the user input information, or the sensor information.

[0061] According to various embodiments of the present disclosure, when the electronic device **201** is identical or similar to an exercise portion determination device (for example, the exercise portion determination device **110** of FIG. **1**), the information processing module **240** may perform a function for determining an exercise portion on the basis of at least one of the sensor information and the user input information. Additionally, when the electronic device **201** is identical or similar to an exercise amount measurement device (for example, the exercise amount measurement device **130** of FIG. **1**), the information processing module **240** may perform a function for measuring an exercise amount on the basis of at least one of the user identification information and the sensor information. Additionally, when the electronic device **201** is identical or similar to an exercise information providing device (for example, the exercise information providing device **150** of FIG. **1**), the information processing module **240** may perform a function for providing exercise information on the basis of at least one of the user input information and the sensor information.

[0062] The control module **250** may execute calculation or data processing for control and/or communication of at least one another component included in the electronic device **201**. For example, the control module **250** may be a processor including one or more of a central processing unit (CPU), an Application Processor (AP), and a communication processor (CP). According to various embodiments of the present disclosure, the control module **250** may be configured in a form of including the information processing module **240** or may be configured in a form of being separated from the information processing module **240** so that it may perform calculation or data processing for control and/or communication in order to execute a function of the information processing module **240**.

[0063] The storage module **260** may store instructions or data relating to at least one another component included in the electronic device **201**. For example, the storage module **260** may store user identification information identified through the user identification module **210**. Additionally, the storage module **260** may store information relating to a function performance of the information processing module **240** or information processed through the information processing module **240**. According to an embodiment of the present disclosure, when the information processing module **240** performs a function for determining an exercise portion, the storage module **260** may store various patterns of a sensor measurement value according to an operation of typical exercise method or an exercise portion determined based on the patterns. Additionally, when the information processing module **240** performs a function for measuring an exercise amount, the storage module **260** may store a measured exercise amount.

[0064] According to various embodiments of the present disclosure, the storage module **260** may store an exercise service application in relation to an exercise service that an exercise information providing system (for example, the exercise information providing system **100** of FIG. **1**) provides. The exercise service application may be an application for providing a user's health management service on the basis of an exercise, for example, a function for recommending an exercise appropriate for a user according to user's body infor-

mation or user input information, providing information on an exercise that a user performs, or designating and providing the order of exercises that a user is to perform. According to an embodiment of the present disclosure, the exercise service application may provide information such as the type, effect, method, intensity, or frequency of an exercise appropriate for a user to a user according to an exercise order. Additionally, the exercise service application may provide detail information of an exercise that a user performs, for example, the intensity, time, frequency, amount, or consumed calories of an exercise, to a user.

[0065] The output module 270 may perform a function for outputting information relating to a function performance of the electronic device 201. The output module 270 may include at least one of a display and an audio output device. According to an embodiment of the present disclosure, the output module 270 may output user's body information or exercise detail information. For example, the output module 270 may display an image object such as a graph representing a muscle specific exercise amount used during a specific exercise on a display. Additionally, the output module 270 may output voice information corresponding to an exercise frequency through a speaker or an earphone.

[0066] The communication module 280 may set communication between electronic devices (the exercise portion determination device 110, the exercise amount measurement device 130, and the exercise information providing device 150) included in an exercise information providing system (for example, the exercise information providing system 100 of FIG. 1) or may set communication with an external electronic device. The communication module 280 may be connected to a network through wired communication or wireless communication. For example, an exercise information providing device may be connected to a network through wired communication or wireless communication on the basis of the communication module 280 to communicate with an exercise portion determination device or an exercise amount measurement device. According to an embodiment of the present disclosure, the communication module 280 may set communication for an IoT based exercise information providing system. The IoT based exercise information providing system will be described with an embodiment below.

[0067] FIG. 3 is a view illustrating an IoT based exercise information providing system according to various embodiments of the present disclosure.

[0068] Referring to FIG. 3, an IoT exercise information providing system 300 according to various embodiments of the present disclosure may include an exercise portion determination device 310, an exercise amount measurement device 330, an exercise information providing device 350, an IoT platform 370, and a database 390. In the description below, content identical, similar, or corresponding to the above-mentioned content may be omitted below.

[0069] Electronic devices included in the exercise information providing system 300 may be connected to each other through wired/wireless communication on the basis of communication modules of the electronic devices. In this case, the IoT platform 370 may perform a function for managing and integrating electronic devices included in the exercise information providing system 300.

[0070] According to various embodiments of the present disclosure, the IoT platform 370 may activate or deactivate electronic devices included in the exercise information providing system 300 without a user's explicit instruction.

According to an embodiment of the present disclosure, when a user directly uses the electronic devices, approaches the electronic devices, or uses a function included in the electronic devices, the IoT platform 370 may activate corresponding electronic devices. For example, when a user approaches or uses an exercise device included in the electronic devices, the IoT platform 370 may activate the electronic devices to induce a function performance of the electronic devices. In relation to this, the IoT platform 370 may obtain the locations of users and the electronic devices on the basis of location based service (LBS). The LBS may be a system for providing various services to a user on the basis of location information obtained through mobile communication network or global positioning system (GPS).

[0071] According to various embodiments of the present disclosure, electronic devices included in the exercise information providing system 300 may identify the approach of a user on the basis of a proximity sensor included in the electronic devices. In this case, in correspondence to a user's approach, the electronic devices may activate a corresponding module for performing a function such as user identification or may deliver a signal (for example, an event) corresponding to the user's approach to the IoT platform 370. According to an embodiment of the present disclosure, when a user directly uses the electronic devices, approaches the electronic devices, or uses a function included in the electronic devices, the IoT platform 370 may activate corresponding electronic devices.

[0072] According to various embodiments of the present disclosure, when a user stop using the electronic devices, is away from the electronic devices, or terminates a function included in the electronic devices, the IoT platform 370 may deactivate corresponding electronic devices.

[0073] According to various embodiments of the present disclosure, the IoT platform 370 may collect information from electronic devices included in the exercise information providing system 300 and then, may integrate, determine, or control user specific information. According to an embodiment of the present disclosure, the IoT platform 370 may be a server for performing an exercise service function for a plurality of users. In this case, the IoT platform 370 may collect determined or measured information from the exercise portion determination device 310 and the exercise amount measurement device 330 and may integrate and manage information on the basis of user identification information.

[0074] Additionally, the IoT platform 370 may determine an exercise appropriate for a user on the basis of user's body information or a preference for a specific exercise, which is included in user specific integrated information. The preference for a specific exercise may be determined on the basis of information such as the number of executions, intensity, or frequency for a specific exercise. For example, when the number of executions, the intensity, or the frequency for a specific exercise is relatively higher in comparison to other exercises provided through exercise service, the IoT Internet platform 370 may determine that a user's preference for a corresponding exercise is high. In this case, the IoT platform 370 may determine an exercise portion according to a highly-preferred specific exercise and then may provide exercises for exercising a corresponding portion to a user.

[0075] According to various embodiments of the present disclosure, the IoT platform 370 may perform a control to store a user specific integrated information in a storage mod-

ule included in the IoT platform 370 or an external storage device (for example, the database 390). In relation to this, the user specific integrated information may be information where user's body information, exercise history information, exercise detail information, and a preference for specific exercise are integrated on the basis of user identification information.

[0076] According to various embodiments of the present disclosure, the IoT platform 370 may provide information utilized for function performance to electronic devices included in the exercise information providing system 300. According to an embodiment of the present disclosure, in relation to specific exercise service provided to each user, the IoT platform 370 may deliver an exercise appropriate for a user to the exercise information providing device 350 according to the order of exercises to be performed and provide it to a user. In relation to this, the IoT platform 370 may use a user specific integrated information stored in a storage module included in the IoT platform 370 or an external storage device (for example, the database 390). Additionally, the IoT platform 370 may deliver to the exercise portion determination device 310 the information on an exercise place, an exercise device, or an exercise auxiliary device stored in the storage module or the external storage device.

[0077] The database 390 may store information for performing functions of electronic devices included in the exercise information providing system 300. According to various embodiments of the present disclosure, the database 390 may include user's body information, or user's exercise history information in user specific integrated information and store it. Additionally, the database 390 may store information on an exercise place, an exercise device, or an exercise auxiliary device.

[0078] According to various embodiments of the present disclosure, the exercise information providing device may include an information processing module configured to determine exercise information corresponding to an exercise portion specific exercise amount on the basis of at least exercise portion information received from an exercise portion determination device and exercise amount information received from an exercise amount measurement device; an output module configured to output the exercise information; and a communication module configured to provide a communication interface between the exercise portion determination device and the exercise amount measurement device.

[0079] According to various embodiments of the present disclosure, the exercise information providing device may be the exercise portion determination device or the exercise amount measurement device.

[0080] According to various embodiments of the present disclosure, the exercise portion determination device may determine the exercise portion information on the basis of at least one of user input information, specified information, information received through at least one sensor included in the exercise portion determination device, and information received through at least one sensor included in the exercise amount measurement device.

[0081] According to various embodiments of the present disclosure, the specified information may include exercise portion information corresponding to at least one of exercise place information, exercise device information, and exercise auxiliary device information, and is stored in at least one of a storage module included in the exercise portion determina-

tion device and an external storage device connected through wired/wireless communication.

[0082] According to various embodiments of the present disclosure, at least one of the information received through at least one sensor included in the exercise portion determination device and the information received through at least one sensor included in the exercise amount measurement device corresponds to pattern information according to an operation of a specified exercise method, and the pattern information may be stored in at least one of a storage module included in the exercise portion determination device and an external storage device connected through wired/wireless communication.

[0083] According to various embodiments of the present disclosure, the exercise amount measurement device may measure the exercise amount information on the basis of at least one of the information received through at least one sensor included in the exercise portion determination device and the information received through at least one sensor included in the exercise amount measurement device.

[0084] According to various embodiments of the present disclosure, the exercise information may include at least one of user's body information, exercise detail information, and exercise list information; the user's body information may include at least one of user's age, sex, weight, height, blood pressure, heart rate, muscle volume, body fat, and body mass index; the exercise detail information may include at least one of the exercise portion corresponding to an exercise performed, the exercise amount, an exercise portion specific exercise amount determined based on the exercise portion and the exercise amount, an exercise type, an exercise name, an exercise intensity, an exercise frequency, an exercise time, calorie consumption amount measured on the basis of the user's body information and the exercise amount, an exercise portion specific exercise amount target value, and an exercise portion specific exercise amount remaining value; and the exercise list information may include at least one of an exercise type, an exercise name, an exercise intensity, an exercise frequency, an exercise time, and an exercise order, each of which corresponds to an exercise to be performed.

[0085] According to various embodiments of the present disclosure, the exercise portion determination device, the exercise amount measurement device, and the exercise information providing device may be Internet of Things (IoT) devices connected to an IoT platform through wired/wireless communication; and the IoT platform may generate user specific integrated information identified by each user on the basis of the exercise portion information received from the exercise portion determination device, the exercise amount information received from the exercise amount measurement device, and the exercise information received from the electronic device and store the generated user specific integrated information.

[0086] According to various embodiments of the present disclosure, the IoT platform may be connected to an external storage device storing at least one of exercise place information, exercise device information, exercise auxiliary device information, and the user specific integrated information, through wired/wireless communication.

[0087] According to various embodiments of the present disclosure, the output module may output at least one of voice information corresponding to the exercise information and an object including a text or image corresponding to the exercise information.

[0088] According to embodiments described below, an exercise information providing method based on various combinations of an exercise portion determination device and an exercise amount measurement device in an exercise information providing system and IoT will be described.

[0089] FIG. 4A is a first view illustrating an exercise portion determination and an exercise amount measurement on the basis of specified information according to various embodiments of the present disclosure, FIG. 4B is a second view illustrating an exercise portion determination and an exercise amount measurement on the basis of specified information according to various embodiments of the present disclosure, and FIG. 4C is a third view illustrating an exercise portion determination and an exercise amount measurement on the basis of specified information according to various embodiments of the present disclosure.

[0090] Referring to FIG. 4A, an exercise information providing system (for example, the exercise information providing system 100 of FIG. 1) according to various embodiments of the present disclosure may include an exercise portion determination device 411 and an exercise amount measurement device 413. According to an embodiment of the present disclosure, the exercise portion determination device 411 may be an “exercise portion specified exercise device,” or essentially an exercise machine. Additionally, the exercise amount measurement device 413 may be an exercise auxiliary device (for example, a wearable exercise device) that includes a sensor module for tracking the exercise done on the exercise machine. For example, the exercise portion determination device 411 may be a fly pec deck machine specified for exercising a portion of the user’s body, which in this case would be a chest portion (or a pectoralis major portion) and the exercise amount measurement device 413 may be an exercise glove that includes a pressure sensor or an acceleration sensor for tracking execution of the exercise routine for the chest. In this case, when a user wears an exercise glove and performs chest exercises depicted in 415 using the fly pec deck machine, an exercise information providing device (not shown) may provide information (such as a number of repetitions) related to the chest to a user on the basis of information collected from one or both of the exercise portion determination device 411 and the exercise amount measurement device 413. For example, an exercise information providing device may provide the qualitative and/or quantitative exercise information regarding the left chest portion and the right chest portion to a user on a plurality of bases, such as, for example, pressure, moving distance, moving time, or moving speed, which corresponds to sensor information generated by the exercise glove worn on the left hand and/or right hand.

[0091] According to various embodiments of the present disclosure, as shown in FIG. 4B, the exercise portion determination device 431 may be a treadmill for exercising at least legs (or a biceps femoris portion), quads, and calves. Additionally, the exercise amount measurement device 433 may be integrated or implemented as athletic shoes which include a pressure sensor and/or an acceleration sensor. In this case, when a user wears the athletic shoes and exercise 435 on the treadmill, an exercise information providing device (not shown) may provide quantitative and/or qualitative information to a user, regarding the movements and other associated information, generated from the exercise portion determination device 431 and/or the exercise amount measurement device 433. For example, an exercise information providing device may separately or integrally provide the qualitative

and/or quantitative exercise information regarding each of the user’s left leg and the right leg to a user based on sensor information collected from each of the athletic shoes.

[0092] Additionally, an exercise information providing device may calculate a ratio of consumed calories corresponding to a muscle specific exercise amount of the both legs to total calories and may provide it to a user. For example, when total calories consumed while a user performs the running exercise 435 are 148 kcal and a pressure ratio of the left leg and the right leg, which are measured from a pressure sensor included in the sports shoes, is 6.4:3.6, an exercise information providing device may output calories corresponding to an exercise amount of the left leg as 94.72 kcal and calories corresponding to an exercise amount of the right leg as 53.28 kcal.

[0093] According to various embodiments of the present disclosure, as shown in FIG. 4C, the exercise portion determination device 451 may be a golf club which may be used to exercise at least a back portion (or a latissimus dorsi portion), a stomach or “core” portion (or an abdominal muscle portion), and/or a leg portion (or a calves portion). Additionally, the exercise amount measurement device 453 may be sports gloves (e.g., golfing gloves) that includes a pressure sensor or an acceleration sensor. In this case, when a user wears exercise gloves and performs a golf swing exercise 455, an exercise information providing device (not shown) may provide muscle specific data based on qualitative and quantitative information on the exercise to a user, collected from the exercise portion determination device 451 and the exercise amount measurement device 453.

[0094] According to various embodiments of the present disclosure, the exercise portion determination device 451 may determine a plurality of exercise portions, or muscle groups benefited or otherwise affected by the performed exercise. Herein, the exercise portion determination device 451 may identify exercise ratio information performed by each exercise portion according to the exercise type. For example, when a user performs the golf swing exercise 455 by using a golf club, the exercise portion determination device 451 may determine that an exercise portions are latissimus dorsi, abdominal muscle, and or calves on the basis of specified information (for example, an exercise type, which in this case may indicate golf swing information). Additionally, during the execution of the golf swing exercise 455, the exercise portion determination device 451 may identify that an exercise portion specific performed exercise ratio is 30% latissimus dorsi, 40% abdominal muscle, and 30% calves. According to various embodiments of the present disclosure, the exercise portion determination device 451 may identify that an exercise portion specific performed exercise ratio using a data retrieved from a database (for example, the database 390) in which exercise portion specific performed exercise ratios/percentages are stored. In this case, if total consumption calories measured through the exercise amount measurement device 453 by performing the golf swing exercise 455 are 129 kcal, an exercise information providing device may determine that latissimus dorsi of 38.7 kcal, abdominal muscle of 51.6 kcal, and calves of 38.7 kcal as consumed calories corresponding to respective performed exercise ratios. According to various embodiments of the present disclosure, the exercise information providing device may determine that consumed calories corresponding to respective performed exercise ratio using a data retrieved from a database (for

example, the database 390) in which consumed calories corresponding to respective performed exercise are stored.

[0095] According to various embodiments of the present disclosure, an exercise information providing device may additionally provide information such as an exercise intensity, an exercise time, an exercise frequency, or an exercise type, which is beneficial for a user, on the basis of user's exercise intensity, exercise time, exercise frequency, or each muscle specific exercise amount. Additionally, an exercise information providing device may provide a correct exercise posture to a user by analyzing a user's exercise posture on the basis of sensor information received from at least one of an exercise portion determination device and an exercise amount measurement device. According to an embodiment of the present disclosure, in relation to providing a correct exercise posture, an exercise information providing device may collect patterns of sensor measurement values corresponding to a correct posture for various exercises from a storage module included in an exercise information providing device and an external electronic device connected to the exercise information providing device through wired/wireless communication.

[0096] FIG. 5 is a view illustrating an exercise portion determination and an exercise amount measurement on the basis of sensor information according to various embodiments of the present disclosure.

[0097] Referring to FIG. 5, an exercise information providing system (for example, the exercise information providing system 100 of FIG. 1) according to various embodiments of the present disclosure, and may include, as above, an exercise portion determination device 511, a first exercise amount measurement device 513, and a second exercise amount measurement device 515. According to an embodiment of the present disclosure, the exercise portion determination device 511 may include a sensor module. Additionally, the first exercise amount measurement device 513 and the second exercise amount measurement device 515 may be exercise auxiliary devices (for example, a wearable exercise device) that also include sensor modules. For example, the exercise portion determination device 511 may be a dumbbell including a gyroscopic sensor and/or an acceleration sensor. Additionally, the first exercise amount measurement device 513 may be sports gloves including a pressure sensor and/or an acceleration sensor, and the second exercise amount measurement device 515 may be sports shoes including a pressure sensor and/or an acceleration sensor.

[0098] According to various embodiments of the present disclosure, when a user exercises with the dumbbells 511, they (e.g., the exercise portion determination device 511) may determine an exercise portion on the basis of sensor information measured through a sensor module included in the exercise portion determination device 511 and a specific pattern of a sensor measurement value according to various exercises. For example, the exercise portion determination device 511 may identify user's body information (for example, a user's height) and a location relationship (for example, a distance between respective portions of a user's body (such as between an elbow, a shoulder and a dumbbell) between a user and a dumbbell on the basis of a sensor module (for example, a proximity sensor) included in the exercise portion determination device 511. Additionally, the exercise portion determination device 511 may determine a movement trajectory of the dumbbell on the basis of a sensor value taking measurements during execution of a specific exercise, and may iden-

tify the type of an exercise by using, for example, a combination of the detected location relationship and the movement trajectory. In this case, the exercise portion determination device 511 may determine an exercise portion or a portion of the user's body being exercised, based on correspondence to the exercise type.

[0099] According to various embodiments of the present disclosure, a user may wear IoT-enabled sports gloves and/or sports shoes and perform exercises such as alternated dumbbell curls 531 or side lateral raises 551 using an IoT-enabled dumbbell. During performance of the alternated dumbbell curls 531, sensor modules included in the first exercise amount measurement device 513 and the second exercise amount measurement device 515 may measure sensor information, represented by the first graph 533. An exercise information providing device (not shown) may measure a pressure ratio corresponding to the left arm portion and the right arm portion on the basis of sensor information corresponding to the first graph 533. Additionally, an exercise information providing device may identify the qualitative and quantitative exercise data of the left arm and the right arm by dividing the performed total exercise amount by the pressure ratio. In this case, an exercise information providing device may provide this data, specific to a muscle used to the user based on the received/detected sensor information. According to an embodiment of the present disclosure, an exercise information providing device may also display or otherwise provide to a user the first graph 533, in the form of an image, video or other visual media. Additionally, when an exercise performed by a user is the side lateral raise 551, sensor modules included in the first exercise amount measurement device 513 and the second exercise amount measurement device 515 may measure sensor information corresponding to a second graph 553.

[0100] According to various embodiments of the present disclosure, an exercise information providing device may provide a correct exercise posture by analyzing a user's exercise posture on the basis of a muscle specific exercise amount of the sensor information. Additionally, an exercise information providing device may provide information such as an exercise intensity, an exercise time, or an exercise frequency of a user.

[0101] According to various embodiments of the present disclosure, the exercise portion determination device 511 may determine an exercise portion by analyzing a physical amount (for example, location, pressure, distance, time, speed, or acceleration) measured through sensor modules included in the first exercise amount measurement device 513 or the second exercise amount measurement device 515. Additionally, the first exercise amount measurement device 513 or the second exercise amount measurement device 515 may measure an exercise amount by analyzing a physical amount measured through a sensor module included in the exercise portion determination device 511. According to various embodiments of the present disclosure, the exercise portion determination function or the exercise amount measurement function may be performed based on sensor modules of electronic devices included in an exercise information providing system through an exercise information providing device.

[0102] FIG. 6 is a view illustrating an exercise portion determination and an exercise amount measurement on the basis of user input information according to various embodiments of the present disclosure.

[0103] Referring to FIG. 6, an exercise information providing system (for example, the exercise information providing system 100 of FIG. 1) according to various embodiments of the present disclosure may include an exercise portion determination device 611 and an exercise amount measurement device 613. According to an embodiment of the present disclosure, the exercise portion determination device 611 may be an electronic device including an input device, such as a portable terminal or a smartphone. Additionally, the exercise amount measurement device 613 may include a sensor module. For example, the exercise portion determination device 611 may be a smartphone including an input device. Additionally, the exercise amount measurement device 613 may be sports gloves including a pressure sensor.

[0104] According to various embodiments of the present disclosure, after designating a pushup exercise to the smartphone 611 and equipping the sports gloves 613, a user may perform a pushup exercise 615. In this case, the exercise portion determination device 611 may detect and deliver an exercise portion (e.g., a muscle group) corresponding to the pushup exercise to an exercise information providing device (not shown). Additionally, the exercise amount measurement device 613 may deliver qualitative and quantitative exercise information measured through a sensor module to the exercise information providing device. For example, the exercise portion determination device 611 may deliver an arm portion (or a biceps portion) as an exercise portion used during a pushup exercise to an exercise information providing device, and the exercise amount measurement device 613 may deliver sensor information corresponding to a physical amount such as pressure measured through a sensor module included in sports gloves, or a number of detected repetitions, to an exercise information providing device.

[0105] In relation to this, the exercise portion determination device 611 may collect information on an actually used exercise portion according to various exercise from a storage module included in the exercise portion determination device 611. Alternatively, the exercise portion determination device 611 may collect information on an actually used exercise portion according to various exercise from an external electronic device connected to the exercise portion determination device 611 via wire/wireless communication through a communication module. According to an embodiment of the present disclosure, an exercise portion determination device may be configured in a form of being included in the exercise portion determination device 611.

[0106] FIG. 7A is a first view illustrating an exercise portion determination and an exercise amount measurement on the basis of a plurality of information according to various embodiments of the present disclosure, FIG. 7B is a second view illustrating an exercise portion determination and an exercise amount measurement on the basis of a plurality of information according to various embodiments of the present disclosure, and FIG. 7C is a third view illustrating an exercise portion determination and an exercise amount measurement on the basis of a plurality of information according to various embodiments of the present disclosure.

[0107] According to various embodiments of the present disclosure, as shown in FIG. 7A, a user may exercise by riding a bicycle riding 717 in a park 711 using a bicycle 713 and wearing sports shoes 715. According to an embodiment of the present disclosure, a user may attach a smartphone to the bicycle 713 or carry a smartphone, and an electronic device including an input/output device or a sensor module may be

installed at a predetermined area of the bicycle 713. Additionally, a user may collect map information on the park 711. The map information may be obtained from an arbitrary electronic device installed at an entrance or a close location of the park 711 by using an electronic device installed at a smartphone or the bicycle 713, or through an external electronic device connected via network, such as a remote server. In this case, the collected map information on the park 711 may include such as distance, direction, altitude, or ground type and an exercise information providing device may provide the information to a user.

[0108] According to various embodiments of the present disclosure, in relation to the bicycle riding exercise 717, an exercise portion determination device may be an electronic device installed at a smartphone or the bicycle 713. Additionally, an exercise amount measurement device may be an electronic device installed at the sports shoes 715 or the bicycle 713 including a sensor module. According to an embodiment of the present disclosure, an exercise portion determination device may determine an exercise portion on the basis of user input information through an input device of a smartphone. Alternatively, an exercise portion determination device may determine an exercise portion through an electronic device installed at the bicycle 713. In relation to this, an electronic device installed at the bicycle 713 may include an input device, specify exercise portion information, or include a sensor module. According to an embodiment of the present disclosure, an exercise amount measurement device may measure an exercise amount on the basis of a sensor module included in the sports shoes 715 or may measure an exercise amount on the basis of an electronic device installed at the bicycle 713. In relation to this, an electronic device installed at the bicycle 713 may include a sensor module or may be connected to a bicycle component (for example, a pedal) including a sensor module.

[0109] According to various embodiments of the present disclosure, an exercise portion determination device or an exercise amount measurement device may determine an exercise portion or measure an exercise amount by additionally using the collected map information of the park 711. An actually used exercise portion and an exercise amount may vary according to the distance, direction, altitude, or ground type of the park 711. An exercise information providing device may include an object corresponding to an exercise portion or an exercise amount determined based on the map information of the park 711 in the map of the park 711 and provide it to a user.

[0110] According to various embodiments of the present disclosure, as shown in FIG. 7B, a user may perform a running exercise 735 in a track 731 wearing sports shoes 733. According to an embodiment of the present disclosure, a user may perform the running exercise 735 while wearing a smart watch on a wrist. A user may collect information on the track 731 from an arbitrary electronic device installed at an entrance or a close location of the track 731 through a smart watch, or may collect information on the track 731 through an external electronic device connected via network. In this case, the collected information of the track 731 may include information such as a length or a ground type.

[0111] According to various embodiments of the present disclosure, in relation to the running exercise 735, an exercise portion determination device may be an IoT-enabled smart watch and an exercise amount measurement device may be IoT-enabled sports shoes 733 that include a sensor module.

For example, an exercise portion determination device may determine an exercise portion on the basis of user input information through an input device of the smart watch. Additionally, an exercise portion determination device may determine an exercise portion on the basis of information of the track 731 collected through a smart watch or a sensor module included in the sports shoes 733. For example, an exercise portion determination device may determine that an exercise to be performed by a user is walking or running on the basis of the information of the track 731. In this case, an exercise portion determination device may include patterns which corresponding to walking or running among various sensor patterns for an analysis target. Additionally, an exercise portion determination device may determine that an exercise performed by a user is running through the comparison of sensor information measured through a sensor module included in the sports shoes 733 and a stored sensor pattern.

[0112] According to various embodiments of the present disclosure, an exercise portion determination device may collect exercise portion information used according to an exercise type from a storage module or an external electronic device connected through a communication module. When a user performs the running exercise 735, an exercise portion determination device may determine exercise portion information according to the running exercise 735 on the basis of stored information or received information and may deliver a corresponding exercise portion to an exercise information providing device.

[0113] According to various embodiments of the present disclosure, an exercise amount measurement device may measure an exercise amount on the basis of a sensor module included in the sports shoes 733. For example, an exercise amount measurement device may measure an exercise amount on the basis of a measured or detected quantity, being physical or otherwise (for example, pressure, moving distance, moving time, or moving speed) and corresponding to sensor information measured through a pressure sensor or an acceleration sensor included in the sports shoes 733.

[0114] According to various embodiments of the present disclosure, an exercise amount measurement device may measure an exercise amount by additionally using at least one of information of the track 731 and sensor information collected through a sensor module installed at the track 731. For example, an exercise amount may vary according to a ground type. Additionally, when a sensor for recognizing a user is installed at the track 731, an exercise amount measurement device may measure an exercise amount on the basis of sensor information collected through the sensor, for example, an exercise distance or a moving speed.

[0115] According to various embodiments of the present disclosure, as shown in FIG. 7C, a user may perform a swimming exercise 755 in the swimming pool 751 while wearing sports gloves 753. According to an embodiment of the present disclosure, a user may additionally wear a smart watch, wear swimming glasses, or carry a smartphone. In this case, a user may collect information on the swimming pool 751 from an arbitrary electronic device installed at an entrance or a close location of the swimming pool 751 through a smart watch, swimming glasses, or a smartphone, or may collect information on the swimming pool 751 through an external electronic device connected via network. In this case, the collected information of the swimming pool 751 may include information such as a length or a water depth.

[0116] According to various embodiments of the present disclosure, a smart watch, swimming glasses, or a smartphone may include the electronic device 201 of FIG. 2, or may be an electronic device having the same or similar configuration to the electronic device 201. For example, the swimming glasses may include a display device in an area (that is, an area for obtaining visibility (for example, a lens area) surrounded by a rim. Additionally, the swimming glasses may include a communication module in a certain portion such as a rim, a band, or a bridge. According to an embodiment of the present disclosure, a smart watch, swimming glasses, or a smartphone may be used as an exercise portion determination device, an exercise amount measurement device, or an exercise information providing device.

[0117] According to various embodiments of the present disclosure, in relation to the swimming exercise 755, an exercise portion determination device may be a smart watch or a smartphone and an exercise amount measurement device may be the sports gloves 753 including a sensor module. For example, an exercise portion determination device may determine an exercise portion on the basis of user input information through an input device of a smart watch or a smartphone. Alternatively, an exercise portion determination device may determine an exercise portion on the basis of information of the swimming pool 751 collected through the smart watch or the smartphone or a sensor module included in the exercise gloves 753. For example, an exercise portion determination device may determine that an exercise performed by a user is swimming on the basis of information of the swimming pool 751, determine a swimming style through a sensor module included in the exercise gloves 753, and determine an exercise portion (e.g., muscle group) corresponding to a corresponding swimming style. Additionally, an exercise amount measurement device may measure an exercise amount on the basis of a sensor module included in the sports gloves 753.

[0118] According to various embodiments of the present disclosure, an exercise amount measurement device may measure an exercise amount by additionally using at least one of information of the swimming pool 751 and sensor information collected through a sensor module installed at the swimming pool 751. Additionally, an exercise information providing device may provide exercise detail information such as an exercise portion, an exercise amount, and a muscle specific exercise amount to a user. For example, an exercise information providing device may be swimming glasses. In this case, an exercise information providing device may display information collected from an exercise portion determination device or an exercise amount measurement device during swimming or information analyzed based on the collected information, in a predetermined area of a display included in swimming glasses.

[0119] FIG. 8 is a view illustrating an IoT based exercise information providing system according to various embodiments of the present disclosure.

[0120] Referring to FIG. 8, an IoT based exercise information providing system (for example, the exercise information providing system 300 of FIG. 3) according to various embodiments of the present disclosure may include an exercise portion determination device 811, an exercise amount measurement device 813, an exercise information providing device 815, and an IoT platform 817. According to an embodiment of the present disclosure, the exercise portion determination device 811 may be a fixed bicycle for exercising a leg portion or a user's body (or a biceps femoris portion, a quads portion,

and a calves portion) and the exercise amount measurement device **813** may be sports shoes including an attached pressure sensor. Additionally, the exercise information providing device **815** may be a head mount type display device (for example, a virtual reality or VR display) for implementing virtual reality, and the IoT platform **817** may be a server for storing user specific exercise history information, exercise device information, and/or exercise auxiliary device information.

[0121] According to various embodiments of the present disclosure, the exercise portion determination device **811**, the exercise amount measurement device **813**, the exercise information providing device **815**, and the IoT platform **817** may be connected to a network **831** through wired/wireless communication and therefore in intercommunication with one another. According to an embodiment of the present disclosure, when a user directly or indirectly uses electronic devices in an IoT-based exercise information providing system, the IoT platform **817** may activate the requisite electronic devices. Additionally, the IoT platform **817** may collect, integrate, or analyze information obtained through operation and/or performance of each of the electronic devices, and similarly may provide information utilized for particular functions of each of the electronic devices to the corresponding electronic devices.

[0122] According to an embodiment of the present disclosure, when a user performs an exercise **819** using the fixed bicycle, the IoT platform **817** may determine an exercise appropriate for a user on the basis of user's exercise history information or user's body information. Additionally, the IoT platform **817** may provide an exercise service to a user on the basis of the determined exercise. For example, the IoT platform **817** may display information such as an exercise type, an exercise time, an exercise intensity, or an exercise frequency corresponding to a determined exercise on a display included in the exercise information providing device **815**, or may output voice information **835** through an audio output device. Additionally, the IoT platform **817** may perform a control to allow an exercise device (for example, a fixed bicycle) to automatically set the intensity of an exercise (for example, a bicycle gear or overall level of difficulty) on the basis of information corresponding to the determined exercise. According to various embodiments of the present disclosure, the IoT platform **817** may collect information corresponding to various VR environments from a storage module included in the IoT platform **817** or an external electronic device connected through a communication module and may deliver the information to the exercise information providing device **815** for display. In this case, the IoT platform **817** or the exercise information providing device **815** may perform a control to deliver the intensity of an exercise corresponding to virtual reality information during exercise performance to an exercise device in real time in order for automatic setting.

[0123] According to various embodiments of the present disclosure, the exercise information providing device **815** may provide exercise detail information **833** or voice information **835** to a user. The exercise detail information **833** may be information corresponding to an exercise status or an exercise result. This information may be provided to a user either as soon as an exercise is performed or as upon the exercise being detected as terminated. Additionally, the voice information **835** may be voice information corresponding to exercise detail information. For example, the voice information **835** may include voice information corresponding to

information such as an exercise type, an exercise intensity, an exercise time, or an exercise frequency.

[0124] The exercise detail information **833** may include a text box **851** including user's body information, exercise distance, exercise time, or consumed total calories, a graph object **853** according to a time, an exercise screen **855** set through virtual reality, or a muscle specific exercise amount image object **857**. The text box **851** may be an object where information corresponding to user's body information, exercise status, or exercise result is expressed in a text format. The graph object **853** may be an object where information corresponding to an exercise status or an exercise result is expressed in a graph format. For example, the graph object **853** may be a graph object corresponding to a total exercise amount or a muscle specific exercise amount determined or measured as soon as an exercise starts or after a predetermined time. The exercise screen **855** may be a screen where information corresponding to various virtual realities is displayed using an object such as an image. Through the exercise screen **855**, a user may receive an actually exercising feeling in various virtual realities. The image object **857** may be an object where a muscle specific exercise amount corresponding to an exercise status or an exercise result is displayed using a body's muscle image.

[0125] FIG. 9 is a view illustrating an output screen of an exercise information providing device **910** according to various embodiments of the present disclosure.

[0126] Referring to FIG. 9, an exercise information providing device **910** according to various embodiments of the present disclosure may output a muscle specific exercise amount image **930**, a text box **950** including user's body information, or an object **970** including exercise service information, to an output screen **911**.

[0127] The muscle specific exercise amount image **930** may be an object where a muscle specific exercise amount corresponding to an exercise status or an exercise result is displayed using a body's muscle image. According to an embodiment of the present disclosure, the muscle specific exercise amount image **930** may include a muscle name **931**, a muscle specific exercise amount **933**, or a muscle location **935**. The muscle name **931** may include a text corresponding to the name of an exercise portion specific muscle and may be disposed at a place adjacent to the muscle location **935** of the corresponding muscle. The muscle specific exercise amount **933** may include information for displaying a muscle specific exercise amount performed by a user in a specified form. The muscle specific exercise amount **933**, for example, may be displayed in percentage on the basis of a recommended exercise or may be displayed in consumed calories. The muscle specific exercise amount **933** may be located adjacent to a related muscle name **931** or a muscle location **935**. The muscle location **935** may include a predetermined area on the basis of a point where a related muscle is located or an adjacent point thereof and may be displayed as an object such as an image. Additionally, the object corresponding to the muscle location **935** may vary the color (for example, color, brightness, or saturation) or transparency of the object on the basis of information corresponding to the muscle specific exercise amount **933**.

[0128] The text box **950** including user's body information may include information such as the user's name, age, sex, weight, or height or additional information such as blood pressure, heart rate, muscle volume, body fat, or body mass index. The text box **950** including user's body information

may include information 953 corresponding to an index 951 and the information 953 corresponding to the index 951 may be expressed in a text format.

[0129] The object 970 including exercise service information may include information for providing an exercise appropriate for a user. The object 970 including exercise service information may include a text box 971 including a muscle specific exercise type, a muscle specific exercise amount graph object 973, or a notification message object 975.

[0130] The text box 971 including a muscle specific exercise type may be an object where the type of an exercise to be performed for the purpose to maximize a muscle specific exercise is displayed. According to an embodiment of the present disclosure, when a specific area, for example, an area where an individual exercise (for example, a bench press, and so on) included in a list of muscles (for example, a chest, and so on) is displayed, is selected, the exercise information providing device 910 may display information on an individual exercise corresponding to the selected area through a method such as pop-up or screen switching. For example, the exercise information providing device 910 may include the information on the individual exercise in a pop-up object in correspondence to the selection and may display it in a predetermined area of an output screen 911. Alternatively, the exercise information providing device 910 may configure a screen including the information on the individual exercise and display it on the output screen 911. According to various embodiments of the present disclosure, information on the type of an exercise included in the text box 971 including the type of a muscle specific exercise or information on a related individual exercise may be information pre-stored in a storage module included in the exercise information providing device 910 or information received from an external electronic device connected to the exercise information providing device 910 through wired/wireless communication.

[0131] The muscle specific exercise amount graph object 973 may be an object for displaying a muscle specific exercise amount performed by a user according to an exercise service provided to a user, as a graph. The muscle specific exercise amount graph object 973 may include information for displaying the degree of a muscle specific exercise amount performed based on a muscle specific recommended exercise amount, in a specified form. A muscle specific exercise amount included in the muscle specific exercise amount graph object 973 may be displayed in percentage (%). Additionally, the muscle specific exercise amount graph object 973 may be may display an image object corresponding to a muscle specific exercise amount in an area corresponding to a related muscle.

[0132] In relation to an exercise service provided to a user, the notification message object 975 may be an object such as a text or an image displaying information that the exercise information providing device 910 to a user. The notification message object 975 may include information corresponding to an exercise type, an exercise order, an exercise intensity, or an exercise frequency, which is appropriate for a user. Alternatively, the notification message object 975 may include information corresponding to an exercise frequency during a specific exercise, an exercise amount to reach a target value, a remaining value of an exercise amount to be performed. In the shown drawing, although it is described that the notification message object 975 is included in the object 970 including exercise service information, the notification message object 975 may be displayed in a pop-up form. Additionally,

voice information corresponding to information included in the notification message object 975 may be outputted through a voice output device.

[0133] FIG. 10 is a view illustrating a method of operating an exercise information providing system relating to an individual exercise according to various embodiments of the present disclosure.

[0134] Referring to FIG. 10, in relation to an exercise service provided from an exercise information providing system (for example, the exercise information providing system 100 of FIG. 1), according to an exercise information providing method an individual exercise performed according to an exercise order included in exercise list information, the exercise information providing system may perform a “check in” operation in operation 1010. According to an embodiment of the present disclosure, when a user uses a specified electronic device (for example, at least one of an exercise portion determination device (for example, the exercise portion determination device of FIG. 1), an exercise amount measurement device (for example, the exercise amount measurement device of FIG. 1), and an exercise information providing device (for example, the exercise information providing device 150 of FIG. 1) during a specific exercise, the electronic device may perform a function for identifying a user through a user identification module. For example, the electronic device may identify a user on the basis of user identification information input from a user through an input module, biometric information measured through a sensor module, and user identification information received from an external electronic device through a communication module. Additionally, the electronic device may process to store user identification information corresponding to the identified user through a storage module.

[0135] According to various embodiments of the present disclosure, in performing at least one of an exercise portion determination function, an exercise amount measurement function, and an exercise information providing function, an exercise information providing system may use user's body information collected from a storage module included in the electronic device or an external electronic device connected to the electronic device through a communication module on the basis of the user's identification information identified through a check in operation.

[0136] In operation 1030, an exercise information providing system may perform a function for determining an exercise portion. According to an embodiment of the present disclosure, an exercise portion determination device included in an exercise information providing system may perform a function for determining an exercise portion that is actually used during a specific exercise on the basis of at least one of specified information, sensor information, and user input information. In relation to this, an exercise portion determination device may collect exercise portion information specified to an exercise place (such as a physical location), an exercise device (such as exercise equipment or installations), or an exercise auxiliary device (such as sensor-equipped gloves or equipment, or a portable terminal) from an arbitrary electronic device included in the exercise place, the exercise device, or the exercise auxiliary device. According to an embodiment of the present disclosure, an exercise portion determination device may be an arbitrary electronic device included in the exercise place, the exercise device, or the exercise auxiliary device. According to various embodiments of the present disclosure, an exercise portion determination

device may determine an exercise portion on the basis of sensor information collected from a sensor module included in the exercise portion determination device or an arbitrary electronic device connected to the exercise portion determination device through a communication module. Additionally, an exercise portion determination device may determine an exercise portion on the basis of user input information collected from an input module included in the exercise portion determination device or an arbitrary electronic device connected to the exercise portion determination device through a communication module.

[0137] In operation **1050**, an exercise information providing system may perform a function for measuring an exercise amount. According to an embodiment of the present disclosure, an exercise amount measurement device in an exercise information providing system may perform a function for measuring an exercise amount on the basis of a sensor module included in the exercise amount measurement device. For example, an exercise amount measurement device may measure an exercise amount that is actually performed during a specific exercise on the basis of a physical quantities and/or measurements (for example, pressure, location, distance, time, or speed) corresponding to sensor information measured through a sensor module.

[0138] In operation **1070**, an exercise information providing system may perform a function for providing exercise information. According to an embodiment of the present disclosure, an exercise information providing device included in an exercise information providing system may provide a muscle specific exercise amount to a user (e.g., a breakdown according to respective muscle-groups) on the basis of an exercise portion determined from an exercise portion determination device and an exercise amount measured from an exercise amount measurement device. Additionally, an exercise information providing device may provide user's body information or exercise detail information to a user.

[0139] According to various embodiments of the present disclosure, an exercise information providing device may differently provide information corresponding to an exercise status or an exercise result by using user's body information or exercise history information collected from a storage module included in the exercise information providing device or an external electronic device connected to the exercise information providing device through a communication module on the basis of user identification information. For example, an exercise information providing device may calculate a weight value for an exercise utilized for a user on the basis of exercise list information appropriate for a user determined using user's body information or exercise history information. In this case, an exercise information providing device may differently display the display location, form, transparency, or color of an object corresponding to information such as a muscle specific exercise amount measured during a specific exercise according to a weight value for an exercise. Additionally, an exercise information providing device may differently output the volume level or repeat count of voice information corresponding to an exercise status or an exercise result as soon as an exercise is performed or terminated.

[0140] In operation **1090**, an exercise information providing system may perform a "check out" operation. According to an embodiment of the present disclosure, when a user terminates a specific exercise or terminates the use of the electronic devices included in an exercise information providing system, the related electronic device may perform a

check out operation. According to various embodiments of the present disclosure, when a user performs a specific exercise provided from an exercise information providing system, the exercise information providing system may determine whether to terminate the specific exercise on the basis of an exercise method, an exercise posture, an exercise time, or an exercise frequency according to the specific exercise provided from the exercise information providing system. Alternatively, when the use of an exercise device or an exercise auxiliary device including an exercise amount measurement device or connected to the exercise amount measurement device through a communication module is terminated during a specific exercise, an exercise information providing system may determine the termination of the specific exercise. According to an embodiment of the present disclosure, when sensor information is maintained constantly because a user does not exercise for a predetermined time, an exercise information providing system may determine the termination of a specific exercise through a sensor module included in an exercise amount measurement device.

[0141] In relation to the checkout operation, an exercise information providing system may store information generated on the basis of a result according to a function performance of the electronic devices in a storage module included in the electronic devices. For example, information such as an exercise portion, an exercise amount, or a muscle specific exercise amount according to an exercise performed by a user may be stored in a storage module of the related electronic devices on the basis of user identification information. Additionally, the check-out operation may include an operation for deactivating the electronic devices.

[0142] FIG. **11** is a view illustrating a method of operating an exercise information providing system relating to exercise service according to various embodiments of the present disclosure. In the description below, content identical, similar, or corresponding to the above-mentioned content may be omitted below.

[0143] Referring to FIG. **11**, in an exercise service providing method, in operation **1110**, an exercise information providing system (for example, the exercise information providing system **100** of FIG. **1**) may perform exercise service application execution and a user identification operation. According to an embodiment of the present disclosure, an exercise information providing system (for example, the exercise information providing device **150** of FIG. **1**) included in an exercise information providing system may include an exercise service application. When a user executes an exercise service application included in an exercise information providing device, the exercise information providing device may identify users through a user identification module. Additionally, an exercise information providing device may collect the identified user's body information from a storage module included in the exercise information providing device or an external electronic device connected to the exercise information providing device through wired/wireless communication.

[0144] According to an embodiment of the present disclosure, in the case of an IoT based exercise information providing system (for example, the exercise information providing system **300** of FIG. **3**), when a user enters or approaches a specific region (for example, a service area managed by an IoT platform) where an IoT platform (for example, the IoT Internet platform **370** of FIG. **3**) is located or IoT devices (for example, the exercise portion determination device **310**, the

exercise amount measurement device **330**, or the exercise information providing device **350** of FIG. **3**) connected to the IoT platform through a communication module are located, the IoT platform may activate an exercise information providing device (for example, the exercise information providing device **350** of FIG. **3**) included in an exercise information providing system. In relation to this, the IoT platform may identify the locations of users and the IoT devices on the basis of LBS. Alternatively, a user's approach may be obtained based on a proximity sensor included in the IoT devices. According to an embodiment of the present disclosure, an IoT platform may identify a user's location or a state that a user enters or approaches the specific region on the basis of a communication module or a sensor module of an electronic device possessed or worn by a user.

[0145] According to various embodiments of the present disclosure, in relation to an exercise service provided to a user, an IoT platform may perform a control to automatically execute an exercise service application for performing an exercise service providing function included in an exercise information providing device. In this case, a user may receive exercise list information appropriate for a user in time from an IoT platform. Additionally, an IoT platform may perform a control to identify a user through a user identification module included in an exercise information providing device.

[0146] When a user identification is completed, in operation **1120**, an exercise information providing system may provide an exercise service according to a user. According to an embodiment of the present disclosure, an exercise information providing system may determine an exercise appropriate for a user on the basis of user's body information or a preference for a specific exercise, which is included in user specific integrated information, and then may provide it. The user specific integrated information may be information where user's body information, exercise history information, exercise detail information, and a preference for specific exercise are integrated on the basis of user identification information. The user specific integrated information may be information generated based on information stored in a storage module of electronic devices included in an exercise information providing system, or stored in an external electronic device connected through wired/wireless communication. According to an embodiment of the present disclosure, in the case of an IoT based exercise information providing system, the user specific integrated information may be information stored in an external storage device (for example, the database **390** of FIG. **3**) in an exercise service function.

[0147] In operation **1130**, in relation to an exercise service provided from an exercise information providing system, a user may perform an individual exercise according to an exercise order corresponding to exercise list information. A step performance for the individual exercise may be similar or identical to the above-mentioned operation in FIG. **10**.

[0148] When the step performance for the individual step is terminated, in operation **1140**, an exercise information providing system may output comprehensive exercise information such as information on an individual exercise performance result, a progressed exercise situation, and an exercise to be performed. According to an embodiment of the present disclosure, an exercise information providing system may output an exercise portion specific exercise amount according to an individual exercise performance or a currently progressed exercise portion specific exercise amount. Additionally, an exercise information providing system may deter-

mine an exercise portion specific exercise amount remaining value on the basis of a currently progressed exercise portion specific exercise amount and an exercise portion specific exercise amount target value. In this case, an exercise information providing system may output exercise information relating to an individual exercise to be performed based on an exercise portion specific exercise amount remaining value.

[0149] In operation **1150**, an exercise information providing system may determine whether there is an individual exercise to be performed. If there is an individual exercise to be performed, an exercise information providing system may return to operation **1130**.

[0150] If there is no individual exercise to be performed, in operation **1160**, an exercise information providing system may terminate an exercise service application. According to an embodiment of the present disclosure, in the case of an IoT based exercise information providing system, when a user is out of a region where an IoT platform is located or a specific region (for example, a service area that an IoT platform manages) where IoT devices connected to the IoT internet platform through a communication module are located, the IoT platform may deactivate an exercise information providing device included in an exercise information providing system. Additionally, an exercise service application included in an exercise information providing device may be terminated automatically. According to various embodiments of the present disclosure, in relation to an exercise service application termination operation, an exercise information providing system may store comprehensive information on an exercise performed by a user in a storage module or an external electronic device connected through a communication module.

[0151] FIG. **12** is a view illustrating a method of operating an IoT based exercise information providing system according to various embodiments of the present disclosure.

[0152] Referring to FIG. **12**, in relation to an IoT based exercise service providing method, an exercise information providing system may include an exercise portion determination device **1210**, an exercise amount measurement device **1230**, an exercise information providing device **1250**, and an IoT platform **1270**. According to an embodiment of the present disclosure, when a user enters or approaches or moves into a specific geographic region (for example, a service area managed by the IoT platform **1270**) where the IoT internet platform **1270** is located, or where IoT devices (for example, the exercise portion determination device **1210**, the exercise amount measurement device **1230**, or the exercise information providing device **1250**), connected to the IoT platform **1270** through a communication module, are located, the IoT platform **1270** may activate the exercise information providing device **1250** included in an exercise information providing system. Additionally, the IoT platform **1270** may perform a control to allow the exercise information providing device **1250** to identify a user. In this case, the exercise information providing device **1250** may perform a "check in" operation **1211** utilized user identification information corresponding to a user. For example, the exercise information providing device **1250** may deliver user identification information to the IoT platform **1270**.

[0153] According to various embodiments of the present disclosure, in relation to the performance of the check in operation **1211**, the IoT platform **1270** may collect user specific integrated information from a storage module included in the IoT platform **1270** or an external storage device (for example, the database **390** of FIG. **3**) connected to the IoT

platform **1270** through a communication module in the basis of user identification information. Additionally, the IoT platform **1270** may deliver the collected information or exercise information appropriate for a user determined based on the collected information to the exercise information providing device **1250**. In this case, the exercise information providing device **1250** may provide exercise service such as user's body information, user's exercise history information, exercise detail information, and exercise list information to a user on the basis of the information.

[0154] When a user approaches an exercise device or an exercise auxiliary device relating to a specific exercise on the basis of the provided exercise service, the exercise portion determination device **1210** and the exercise amount measurement device **1230** relating to the specific exercise may also perform check in operations **1213** and **1215**, respectively. In this case, the exercise portion determination device **1210** and the exercise amount measurement device **1230** may deliver exercise device information or exercise auxiliary device information to the IoT platform **1270**. Additionally, the exercise portion determination device **1210** and the exercise amount measurement device **1230** may identify a user through a user identification module and may deliver the identified user identification information to the IoT platform **1270**. The IoT platform **1270** may collect user specific integrated information on the basis of user identification information to deliver it to the exercise portion determination device **1210** and the exercise amount measurement device **1230**, and the exercise portion determination device **1210** and the exercise amount measurement device **1230** may use the user specific integrated information in order to perform functions thereof. According to various embodiments of the present disclosure, the exercise portion determination device **1210** or the exercise amount measurement device **1230** may collect related exercise device information or exercise auxiliary device information from an external storage device connected to the IoT platform **1270** through a communication module.

[0155] When a user performs a specific exercise, the exercise portion determination device **1210** may determine an exercise portion and perform operation **1231** for delivering the determined information to the IoT platform **1270**. Additionally, the exercise amount measurement device **1230** may measure an exercise amount and may perform operation **1233** for delivering the measured information to the IoT platform **1270**. In this case, the IoT platform **1270** may perform operation **1235** for exchanging the information, or integrated or determined information, with the exercise information providing device **1250** based on the information. For example, the IoT platform **1270** may deliver an exercise portion and an exercise amount to the exercise information providing device **1250** and the exercise information providing device **1250** may deliver at least one of integrated information or exercise detail information, such as a muscle specific exercise amount determined based on the integrated information, to the IoT platform **1270**.

[0156] According to various embodiments of the present disclosure, an operation for delivering to the IoT platform **1270** at least one of an exercise portion determined through the exercise portion determination device **1210** and an exercise amount measured through the exercise amount measurement device **1230** may be omitted and the at least one may be directly delivered to the exercise information providing device **1250**. Alternatively, the exercise portion determina-

tion device **1210** and the exercise amount measurement device **1230** may be connected through wired/wireless communication to perform operation **1237** for exchanging an exercise portion and an exercise amount with each other and may perform operation **1239** for delivering the information to the exercise information providing device **1250**.

[0157] According to various embodiments of the present disclosure, the exercise information providing device **1250** may determine exercise detail information such as a muscle specific exercise amount on the basis of an exercise portion and an exercise amount and may provide the exercise detail information to a user. Additionally, the exercise information providing device **1250** may collect list information of exercise to be performed by a user from the IoT platform **1270**. For example, the exercise information providing device **1250** may collect information corresponding to the type of an exercise to be performed by a user, an exercise name, an exercise intensity, an exercise frequency, or an exercise order. Additionally, the exercise information providing device **1250** may collect detail information on a related exercise, for example, information corresponding to an exercise method, an exercise posture, or an exercise effect, according to an exercise order from the IoT platform **1270** or an external electronic device connected through wired/wireless communication, and may provide the collected information to a user.

[0158] According to various embodiments of the present disclosure, when a related exercise is terminated, the exercise portion determination device **1210** and the exercise amount measurement device **1230** may perform check out operations **1251** and **1253**. According to an embodiment of the present disclosure, in relation to an exercise service provision, in the case that a specific exercise is newly provided to a user through the exercise information providing device **1250**, if a user approaches an exercise device relating to a specific exercise, use an exercise device relating to a specific exercise, or wears an exercise auxiliary device relating to a specific exercise, the exercise portion determination device **1210** and the exercise amount measurement device **1230** corresponding to the specific exercise may perform check in operations **1213** and **1215**.

[0159] According to various embodiments of the present disclosure, in relation to an exercise service provision, when all exercises provided are performed or exercise service is terminated (for example, an exercise service application is terminated), the exercise information providing device **1250** may perform check out operation **1255**. According to an embodiment of the present disclosure, when check out operation **1255** is performed, the exercise information providing device **1250** may deliver user specific integrated information to the IoT platform **1270** and store it. In this case, the IoT platform **1270** may store user specific integrated information in a storage module included in the IoT platform **1270** or an external storage device connected to the IoT platform **1270** through wired/wireless communication.

[0160] As mentioned above, an IoT based exercise information providing system may timely provide list information of exercises appropriate for a user or detail information of an exercise to be performed by a user without a user's explicit instruction. According to an embodiment of the present disclosure, a user may use a fitness center providing a user specific exercise service while carrying a smartphone having an exercise service application installed. In this case, when a user carrying a smartphone enters a fitness center, the server may recognize the smartphone. In relation to this, the server

may be an IoT platform and the smartphone may be an exercise information providing device. The server may recognize that the smartphone enters a specific region where the server is located, for example, a service area managed by the server by identifying the location of the smartphone on the basis of LBS.

[0161] If the server recognizes the smartphone, the server may execute an exercise service application installed on the smartphone. In relation to this, the smartphone may transmit the user identification information of the smartphone to the server. Additionally, the server may transmit, to the smartphone, user specific integrated information stored in a storage module included in the server or an external storage device connected to the server through wired/wireless communication, by using the user identification information. The user specific integrated information may be information where user's body information, exercise history information, exercise detail information, and a preference for specific exercise are integrated on the basis of user identification information. Additionally, the IoT platform **370** may determine an exercise appropriate for a user on the basis of user's body information or a preference for a specific exercise, which is included in user specific integrated information, and may provide the determined exercise to the smartphone.

[0162] If information on the smartphone user is not stored in the server, the server may collect user's body information from a user through an exercise service application installed at the smartphone and may store the user's body information together with the user identification information. Additionally, the server may determine list information of exercises appropriate for a user on the basis of user's body information and may deliver the list information to the smartphone to provide it to a user. If the server does not collect user's body information, it may deliver exercise list information corresponding to an initial setting value to the smartphone.

[0163] When a user performs a corresponding individual exercise according to an exercise order on the basis of exercise list information provided from the server, an exercise device or an auxiliary device relating to the corresponding individual exercise may transmit user's identification information to the server in correspondence to user's approach, use, or wearing. In relation to this, the exercise device may be an exercise portion determination device and the exercise auxiliary device may be an exercise amount measurement device. The exercise device or the exercise auxiliary device may identify a user on the basis of user identification information inputted from a user through an input module, biometric information measured through a sensor module, and user identification information received from an external electronic device through a communication module.

[0164] If receiving user identification from the exercise device or the exercise auxiliary device, the server may transmit, to the exercise device or the exercise auxiliary device, user specific integrated information stored in a storage module included in the server or an external storage device connected to the server through wired/wireless communication. In this case, the exercise device or the exercise auxiliary device may use user's body information included in the user specific integrated information in order to perform a function.

[0165] In relation to an individual exercise performance, the smartphone may receive the determined exercise portion information and measured exercise amount information from the exercise device or the exercise auxiliary device. Additionally, as soon as a corresponding individual exercise is per-

formed or terminated, the smartphone may provide, to a user, exercise detail information such as an exercise portion, an exercise amount, an exercise portion specific exercise amount, an exercise type, an exercise name, an exercise intensity, an exercise frequency, an exercise time, calorie consumption amount, an exercise portion specific exercise amount target value, or an exercise portion specific exercise amount remaining value corresponding to a performed exercise. Additionally, the smartphone may perform processing to transmit the exercise detail information to the server and store it.

[0166] When a user completes the performance of all individual exercises provided according to an exercise order on the basis of exercise list information provided from the server, the server may determine an inadequate part in an individual exercise that a user performs on the basis of an exercise portion specific exercise amount remaining value in the exercise detail information received from the smartphone and allow a user to perform the inadequate part again. Additionally, if all exercises provided are terminated, the server may deliver overall results of exercises performed by a user to the smartphone to deliver them to a user.

[0167] When a user carrying the smartphone leaves a fitness center, as the smartphone leaves a specific region where the server is located, for example, a service area managed by the server, the server may store user specific integrated information in a storage module included in the server or an external storage device connected to the server through wired/wireless communication. According to various embodiments of the present disclosure, the server may deliver information on at what point which exercise is to be performed better, that is, an exercise point and exercise list information, to the smartphone to provide it to a user.

[0168] According to various embodiments of the present disclosure, an exercise information providing method may include: receiving exercise portion information from a first electronic device; receiving exercise amount information from a second electronic device; determining exercise information corresponding to an exercise portion specific exercise amount on the basis of at least the exercise portion information and the exercise amount information; and outputting the exercise information.

[0169] According to various embodiments of the present disclosure, the method may further include: outputting, by the first electronic device, the exercise information; or outputting, by the second electronic device, the exercise information.

[0170] According to various embodiments of the present disclosure, the receiving of the exercise portion information may include determining the exercise portion information on the basis of at least one of user input information, specified information, information received through at least one sensor included in the first electronic device, and information received through at least one sensor included in the second electronic device.

[0171] According to various embodiments of the present disclosure, the determining of the exercise portion information may further include: including exercise portion information corresponding to at least one of exercise place information, exercise device information, and exercise auxiliary device information in the specified information; and storing the specified information in at least one of a storage module included in the first electronic device and an external storage device connected through wired/wireless communication.

[0172] According to various embodiments of the present disclosure, the determining of the exercise portion information may further include: performing a determination on the basis of at least one of the information received through at least one sensor included in the first electronic device and the information received through at least one sensor included in the second electronic device and pattern information according to an operation of a specified exercise method; and storing the pattern information in at least one of a storage module included in the first electronic device and an external storage device connected through wired/wireless communication.

[0173] According to various embodiments of the present disclosure, the receiving of the exercise amount information may include measuring the exercise amount information on the basis of at least one of the information received through at least one sensor included in the first electronic device and the information received through at least one sensor included in the second electronic device.

[0174] According to various embodiments of the present disclosure, the determining of the exercise information may include: Including at least one of user's age, sex, weight, height, blood pressure, heart rate, muscle volume, body fat, and body mass index in the user's body information; Including at least one of the exercise portion corresponding to an exercise performed, the exercise amount, an exercise portion specific exercise amount determined based on the exercise portion and the exercise amount, an exercise type, an exercise name, an exercise intensity, an exercise frequency, an exercise time, calorie consumption amount measured on the basis of the user's body information and the exercise amount, an exercise portion specific exercise amount target value, and an exercise portion specific exercise amount remaining value in the exercise detail information; Including at least one of an exercise type, an exercise name, an exercise intensity, an exercise frequency, an exercise time, and an exercise order, each of which corresponds to an exercise to be performed, in the exercise list information; and Including at least one of the user's body information, the exercise detail information, and the exercise list information in the exercise information.

[0175] According to various embodiments of the present disclosure, the method may further include: connecting the first electronic device, the second electronic device, and the electronic device, which are Internet of Things (IoT) devices, to an IoT platform through wired/wireless communication; generating user specific integrated information identified by each user on the basis of the exercise portion information received from the first electronic device, the exercise amount information received from the second electronic device, and the exercise information received from the electronic device; and storing the generated user specific integrated information.

[0176] According to various embodiments of the present disclosure, the connecting of the first electronic device, the second electronic device, and the electronic device may further include connecting an external storage device storing at least one of exercise place information, exercise device information, exercise auxiliary device information, and the user specific integrated information to the IoT platform through wired/wireless communication.

[0177] According to various embodiments of the present disclosure, the outputting of the exercise information may further include outputting at least one of voice information

corresponding to the exercise information and an object including a text or image corresponding to the exercise information.

[0178] FIG. 13 is a view illustrating an electronic device in a network environment according to various embodiments of the present disclosure.

[0179] Referring to FIG. 13, an electronic device 1301 in a network environment 1300 is described according to various embodiments of the present disclosure. The electronic device 1301 may include a bus 1310, a processor 1320, a memory 1330, an input/output interface 1350, a display 1360, and a communication interface 1370. According to an embodiment of the present disclosure, the electronic device 1301 may omit at least one of the components or may additionally include a different component.

[0180] The bus 1310, for example, may include a circuit for connecting the components 1310 to 1370 to each other and delivering a communication (for example, control message and/or data) therebetween.

[0181] The processor 1320 may include at least one of a central processing unit (CPU), an Application Processor (AP), and a communication processor (CP). The processor 1320, for example, may execute calculation or data processing for control and/or communication of at least one another component of the electronic device 1301.

[0182] The memory 1330 may include volatile and/or non-volatile memory. The memory 1330, for example, may store instructions or data relating to at least one another component of the electronic device 1301. According to an embodiment of the present disclosure, the memory 1330 may store software and/or program 1340. The programs 1340 may include a kernel 1341, a middleware 1343, an application programming interface (API) 1345, and/or an application program (or an application) 1347. At least part of the kernel 1341, the middleware 1343, or the API 1345 may be called an operating system (OS).

[0183] The kernel 1341, for example, may control or manage system resources (for example, the bus 1310, the processor 1320, the memory 1330, and so on) used for performing operations or functions implemented in other programs (for example, the middleware 1343, the API 1345, or the application program 1347). Additionally, the kernel 1341 may provide an interface for controlling or managing system resources by accessing an individual component of the electronic device 1301 from the middleware 1343, the API 1345, or the application program 1347.

[0184] The middleware 1343, for example, may serve as an intermediary role for exchanging data as the API 1345 or the application program 1347 communicates with the kernel 1341.

[0185] Additionally, the middleware 1343 may process at least one job request received from the application program 1347 according to a priority. For example, the middleware 1343 may assign to at least one application program 1347 a priority for using a system resource (for example, the bus 1310, the processor 1320, or the memory 1330) of the electronic device 1301. For example, the middleware 1343 may perform scheduling or load balancing on the at least one job request by processing the at least one job request according to the priority assigned to the at least one job request.

[0186] The API 1345, as an interface for allowing the application program 1347 to control a function provided from the kernel 1341 or the middleware 1343, may include at least one

interface or function (for example, an instruction) for file control, window control, image processing, or character control.

[0187] The input/output interface **1350**, for example, may serve as an interface for delivering instructions or data inputted from a user or another external device to another component(s) of the electronic device **1301**. Additionally, the input/output interface **1350** may output instructions or data received from another component(s) of the electronic device **1301** to a user or another external device.

[0188] The display **1360**, for example, may include a liquid crystal display (LCD), a light emitting diode (LED) display, an organic light emitting diode (OLED) display, a microelectromechanical systems (MEMS) display, or an electronic paper display. The display **1360** may display various content (for example, text, image, video, icon, symbol, and so on) to a user. The display **1360** may include a touch screen, and for example, may receive a touch, gesture, proximity, or hovering input by using an electronic pen or a user's body part.

[0189] The communication interface **1370**, for example, may set a communication between the electronic device **1301** and an external device (for example, the first external electronic device **1302**, the second external electronic device **1304**, or the server **1306**). For example, the communication interface **1370** may communicate with an external device (for example, the second external electronic device **1304** or the server **1306**) in connection to the network **1362** through wireless communication or wired communication.

[0190] The wireless communication may use at least one of LTE, LTE-A, CDMA, WCDMA, UMTS, WiBro, or GSM as a cellular communication protocol, for example. Additionally, the wireless communication, for example, may include a short-range communication **1364**. The short range communication **1364**, for example, may include at least one of wireless fidelity (WiFi), Bluetooth (BT), near field communication (NFC), global positioning system (GPS), and so on. The wired communication, for example, may include at least one of universal serial bus (USB), high definition multimedia interface (HDMI), recommended standard 232 (RS-232), and plain old telephone service (POTS). The network **1362** may include telecommunications network, for example, at least one of computer network (for example, LAN or WAN), internet, and telephone network.

[0191] Each of the first and second external electronic devices **1302** and **1304** may be the same or different type of the electronic device **1301**. According to an embodiment of the present disclosure, the server **1306** may include a group of one or more servers. According to various embodiments of the present disclosure, all or part of operations executed on the electronic device **1301** may be executed on another one or more electronic devices (for example, the electronic device **1302** or **1304** or the server **1306**). According to an embodiment of the present disclosure, when the electronic device **1301** performs a certain function or service automatically or by a request, it may request at least part of a function relating thereto from another device (for example, the electronic device **1302** or **1304** or the server **1306**) instead of or in addition to executing the function or service by itself. The other electronic device (for example, the external electronic device **1302** or **1304** or the server **1306**) may execute a requested function or an additional function and may deliver an execution result to the electronic device **1301**. The electronic device **1301** may provide the requested function or service as it is or by processing the received result addition-

ally. For this, for example, cloud computing, distributed computing, or client-server computing technology may be used.

[0192] FIG. **14** is a block diagram of an electronic device according to various embodiments of the present disclosure.

[0193] Referring to FIG. **14**, an electronic device **1401**, for example, may configure all or part of the above-mentioned electronic device **1301** shown in FIG. **13**. The electronic device **1401** may include at least one processor (for example, an application processor (AP) **1410**), a communication module **1420**, a subscriber identification module (SIM) **1424**, a memory **1430**, a sensor module **1440**, an input device **1450**, a display **1460**, an interface **1470**, an audio module **1480**, a camera module **1491**, a power management module **1495**, a battery **1496**, an indicator **1497**, and a motor **1498**.

[0194] The processor **1410** may control a plurality of hardware or software components connected thereto and also may perform various data processing and operations by executing an operating system or an application program. The processor **1410** may be implemented with a system on chip (SoC), for example. According to an embodiment of the present disclosure, the processor **1410** may further include a graphic processing unit (GPU) (not shown) and/or an image signal processor. The processor **1410** may include at least part (for example, the cellular module **1421**) of components shown in FIG. **14**. The processor **1410** may load commands or data received from at least one of other components (for example, nonvolatile memory) and process them and may store various data in a nonvolatile memory.

[0195] The communication module **1420** may have the same or similar configuration to the communication interface **1370** of FIG. **13**. The communication module **1420** may include a cellular module **1421**, a WiFi module **1423**, a BT module **1425**, a GPS module **1427**, an NFC module **1428**, and a radio frequency (RF) module **1429**.

[0196] The cellular module **1421**, for example, may provide voice call, video call, text service, or internet service through communication network. According to an embodiment of the present disclosure, the cellular module **1421** may perform a distinction and authentication operation on the electronic device **1401** in a communication network by using a SIM (for example, a SIM card) **1424**. According to an embodiment of the present disclosure, the cellular module **1421** may perform at least part of a function that the processor **1410** provides. According to an embodiment of the present disclosure, the cellular module **1421** may further include a communication processor (CP).

[0197] Each of the WiFi module **1423**, the BT module **1425**, the GPS module **1427**, and the NFC module **1428** may include a processor for processing data transmitted/received through a corresponding module. According to an embodiment of the present disclosure, at least part (for example, at least one) of the cellular module **1421**, the WiFi module **1423**, the BT module **1425**, the GPS module **1427**, and the NFC module **1428** may be included in one integrated chip (IC) or IC package.

[0198] The RF module **1429**, for example, may transmit/receive communication signals (for example, RF signals). The RF module **1429**, for example, may include a transceiver, a power amp module (PAM), a frequency filter, a low noise amplifier (LNA), or an antenna. According to another embodiment of the present disclosure, at least one of the cellular module **1421**, the WiFi module **1423**, the Bluetooth

module **1425**, the GPS module **1427**, and the NFC module **1428** may transmit/receive RF signals through a separate RF module.

[**0199**] The SIM **1424**, for example, may include a card including a SIM and/or an embedded SIM and also may include unique identification information (for example, an integrated circuit card identifier (ICCID) or subscriber information (for example, an international mobile subscriber identity (IMSI)).

[**0200**] The memory **1430** (for example, the memory **1330**) may include an internal memory **1432** or an external memory **1434**. The internal memory **1432** may include at least one of a volatile memory (for example, dynamic RAM (DRAM), static RAM (SRAM), synchronous dynamic RAM (SDRAM) and a non-volatile memory (for example, one time programmable ROM (OTPROM), programmable ROM (PROM), erasable and programmable ROM (EPROM), electrically erasable and programmable ROM (EEPROM), mask ROM, flash ROM, flash memory (for example, NAND flash memory or NOR flash memory), hard drive, or solid state drive (SSD)).

[**0201**] The external memory **1434** may further include flash drive, for example, compact flash (CF), secure digital (SD), micro Micro-SD, Mini-SD, extreme digital (xD), (MultiMediaCard or MMC), or a memorystick. The external memory **1434** may be functionally and/or physically connected to the electronic device **1401** through various interfaces.

[**0202**] The sensor module **1440** measures physical quantities or detects an operating state of the electronic device **1401**, thereby converting the measured or detected information into electrical signals. The sensor module **1440** may include at least one of a gesture sensor **1440A**, a gyro sensor **1440B**, a barometric pressure sensor **1440C**, a magnetic sensor **1440D**, an acceleration sensor **1440E**, a grip sensor **1440F**, a proximity sensor **1440G**, a color sensor **1440H** (for example, a red, green, blue (RGB) sensor), a biometric sensor **1440I**, a temperature/humidity sensor **1440J**, an illumination sensor **1440K**, and an ultra violet (UV) sensor **1440M**. Additionally or alternatively, the sensor module **1440** may include an E-nose sensor, an electromyography (EMG) sensor, an electroencephalogram (EEG) sensor, an electrocardiogram (ECG) sensor, an infra-red (IR) sensor, an iris sensor, or a fingerprint sensor. The sensor module **1440** may further include a control circuit for controlling at least one sensor therein. According to an embodiment of the present disclosure, the electronic device **1401** may further include a processor configured to control the sensor module **1440** as part of or separately from the processor **1410** and thus may control the sensor module **1440** while the processor **1410** is in a sleep state.

[**0203**] The input device **1450** may include a touch panel **1452**, a (digital) pen sensor **1454**, a key **1456**, or an ultrasonic input device **1458**. The touch panel **1452** may use at least one of capacitive, resistive, infrared, or ultrasonic methods, for example. Additionally, the touch panel **1452** may further include a control circuit. The touch panel **1452** may further include a tactile layer to provide tactile response to a user.

[**0204**] The (digital) pen sensor **1454**, for example, may include a sheet for recognition as part of a touch panel or a separate sheet for recognition. The key **1456** may include a physical button, an optical key, or a keypad, for example. The ultrasonic input device **1458** may detect ultrasonic waves generated from an input tool through a microphone (for

example, the microphone **1488**) in order to check data corresponding to the detected ultrasonic waves.

[**0205**] The display **1460** (for example, the display **1360**) may include a panel **1462**, a hologram device **1464**, or a projector **1466**. The panel **1462** may have the same or similar configuration to the display **1360** of FIG. **13**. The panel **1462** may be implemented to be flexible, transparent, or wearable, for example. The panel **1462** and the touch panel **1452** may be configured with one module. The hologram **1464** may show three-dimensional images in the air by using the interference of light. The projector **1466** may display an image by projecting light on a screen. The screen, for example, may be placed inside or outside the electronic device **1401**. According to an embodiment of the present disclosure, the display **1460** may further include a control circuit for controlling the panel **1462**, the hologram device **1464**, or the projector **1466**.

[**0206**] The interface **1470** may include a high-definition multimedia interface (HDMI) **1472**, a universal serial bus (USB) **1474**, an optical interface **1476**, or a D-subminiature (sub) **1478**, for example. The interface **1470**, for example, may be included in the communication interface **1370** shown in FIG. **13**. Additionally or alternatively, the interface **1470** may include a mobile high-definition link (MHL) interface, a secure Digital (SD) card/multi-media card (MMC) interface, or an infrared data association (IrDA) standard interface.

[**0207**] The audio module **1480** may convert sound into electrical signals and convert electrical signals into sounds. At least some components of the audio module **1480**, for example, may be included in the input/output interface **1350** shown in FIG. **13**. The audio module **1480** may process sound information inputted/outputted through a speaker **1482**, a receiver **1484**, an earphone **1486**, or a microphone **1488**.

[**0208**] The camera module **1491**, as a device for capturing a still image and a video, may include at least one image sensor (for example, a front sensor or a rear sensor), a lens (not shown), an image signal processor (ISP) (not shown), or a flash (not shown) (for example, an LED or a xenon lamp).

[**0209**] The power management module **1495** may manage the power of the electronic device **1401**. According to an embodiment of the present disclosure, the power management module **1495** may include a power management IC (PMIC), a charger IC, or a battery or fuel gauge, for example. The PMIC may have a wired and/or wireless charging method. As the wireless charging method, for example, there is a magnetic resonance method, a magnetic induction method, or an electromagnetic method. An additional circuit for wireless charging, for example, a circuit such as a coil loop, a resonant circuit, or a rectifier circuit, may be added. The battery gauge may measure the remaining amount of the battery **1496**, or a voltage, current, or temperature thereof during charging. The battery **1496**, for example, may include a rechargeable battery and/or a solar battery.

[**0210**] The indicator **1497** may display a specific state of the electronic device **1401** or part thereof (for example, the processor **1410**), for example, a booting state, a message state, or a charging state. The motor **1498** may convert electrical signals into mechanical vibration and may generate vibration or haptic effect. Although not shown in the drawings, the electronic device **1401** may include a processing device (for example, a GPU) for mobile TV support. A processing device for mobile TV support may process media data according to the standards such as digital multimedia broadcasting (DMB), digital video broadcasting (DVB), or media-FLO.

[0211] Each of the above-mentioned components of the electronic device according to various embodiments of the present disclosure may be configured with at least one component and the name of a corresponding component may vary according to the kind of an electronic device. According to various embodiments of the present disclosure, an electronic device according to various embodiments of the present disclosure may include at least one of the above-mentioned components, may not include some of the above-mentioned components, or may further include another component. Additionally, some of components in an electronic device according to various embodiments of the present disclosure are configured as one entity, so that functions of previous corresponding components are performed identically.

[0212] FIG. 15 is a block diagram of a program module according to various embodiments of the present disclosure.

[0213] According to an embodiment, the program module 1510 (for example, the program 1340) may include an operating system (OS) for controlling a resource relating to an electronic device (for example, the electronic device 1301) and/or various applications (for example, the application program 1347) running on the OS. The OS, for example, may include android, iOS, windows, symbian, tizen, or bada.

[0214] The program module 1510 may include a kernel 1520, a middleware 1530, an API 1560, and/or an application 1570. At least part of the program module 1510 may be preloaded on an electronic device or may be downloaded from a server (for example, the electronic devices 1302 and 1304 and the server device 1306).

[0215] The kernel 1520 (for example, the kernel 1341), for example, may include a system resource manager 1521, or a device driver 1523. The system resource manager 1521 may perform the control, allocation, or retrieval of a system resource. According to an embodiment of the disclosure, the system resource manager 1521 may include a process management unit, a memory management unit, or a file system management unit. The device driver 1523, for example, a display driver, a camera driver, a Bluetooth driver, a sharing memory driver, a USB driver, a keypad driver, a WiFi driver, an audio driver, or an inter-process communication (IPC) driver.

[0216] The middleware 1530, for example, may provide a function that the application 1570 utilizes commonly, or may provide various functions to the application 1570 through the API 1560 in order to allow the application 1570 to efficiently use a limited system resource inside the electronic device. According to an embodiment of the disclosure, the middleware 1530 (for example, the middleware 1343) may include at least one of a runtime library 1535, an application manager 1541, a window manager 1542, a multimedia manager 1543, a resource manager 1544, a power manager 1545, a database manager 1546, a package manager 1547, a connectivity manager 1548, a notification manager 1549, a location manager 1550, a graphic manager 1551, and a security manager 1552.

[0217] The runtime library 1535, for example, may include a library module that a compiler uses to add a new function through a programming language while the application 1570 is running. The runtime library 1535 may perform a function on input/output management, memory management, or an arithmetic function.

[0218] The application manager 1541, for example, may manage the life cycle of at least one application among the applications 1570. The window manager 1542 may manage a GUI resource used in a screen. The multimedia manager 1543

may recognize a format for playing various media files and may encode or decode a media file by using the codec corresponding to a corresponding format. The resource manager 1544 may manage a resource such as a source code, a memory, or a storage space of at least any one of the applications 1570.

[0219] The power manager 1545, for example, may operate together with a basic input/output system (BIOS) to manage the battery or power and may provide power information utilized for an operation of the electronic device. The database manager 1546 may create, search, or modify a database used in at least one application among the applications 1570. The package manager 1547 may manage the installation or update of an application distributed in a package file format.

[0220] The connectivity manager 1548 may manage a wireless connection such as WiFi or Bluetooth. The notification manager 1549 may display or notify an event such as arrival messages, appointments, and proximity alerts to a user in a manner of not interrupting the user. The location manager 1550 may manage location information on an electronic device. The graphic manager 1551 may manage a graphic effect to be provided to a user or a user interface relating thereto. The security manager 1552 may provide various security functions utilized for system security or user authentication. According to an embodiment, when an electronic device (for example, the electronic device 1301) includes a phone function, the middleware 1530 may further include a telephony manager for managing a voice or video call function of the electronic device.

[0221] The middleware 1530 may include a middleware module for forming a combination of various functions of the above-mentioned components. The middleware 1530 may provide a module specialized for each type of OS to provide differentiated functions. Additionally, the middleware 1530 may delete part of existing components or add new components dynamically.

[0222] The API 1560 (for example, the API 1345), for example, as a set of API programming functions, may be provided as another configuration according to OS. For example, in the case of android or iOS, one API set may be provided for each platform and in the case Tizen, at least two API sets may be provided for each platform.

[0223] The application 1570 (for example, the application program 1347) may include at least one application for providing functions such as a home 1571, a dialer 1572, an SMS/MMS 1573, an instant message 1574, a browser 1575, a camera 1576, an alarm 1577, a contact 1578, a voice dial 1579, an e-mail 1580, a calendar 1581, a media player 1582, an album 1583, a clock 1584, health care (for example, measure an exercise amount or blood sugar), or environmental information provision (for example, provide air pressure, humidity, or temperature information).

[0224] According to an embodiment, the application 1570 may include an application (hereinafter referred to as "information exchange application") for supporting information exchange between the electronic device (for example, the electronic device 1301) and an external electronic device (for example, the electronic devices 1302 and 1304). The information exchange application, for example, may include a notification relay application for relaying specific information to the external device or a device management application for managing the external electronic device.

[0225] For example, the notification relay application may have a function for relaying to an external electronic device

(for example, electronic devices **1302** and **1304**) notification information occurring from another application (for example, an SMS/MMS application, an e-mail application, a health care application, or an environmental information application) of the electronic device. Additionally, the notification relay application may receive notification information from an external electronic device and may then provide the received notification information to a user.

[0226] The device management application, for example, may manage (for example, install, delete, or update) at least one function (turn-on/turn off of the external electronic device itself (or some components) or the brightness (or resolution) adjustment of a display) of an external electronic device (for example, the electronic devices **1302** and **1304**) communicating with the electronic device, an application operating in the external electronic device, or a service (for example, call service or message service) provided from the external device.

[0227] According to an embodiment of the disclosure, the application **1570** may include a specified application (for example, a health care application of a mobile medical device) according to the property of an external electronic device (for example, the electronic devices **1302** and **1304**). According to an embodiment, the application **1570** may include an application received from an external electronic device (for example, the server **1306** or the electronic device **1302** or **1304**). According to an embodiment of the disclosure, the application **1570** may include a preloaded application or a third party application downloadable from a server. The names of components in the program module **1510** according to the shown embodiment may vary depending on the type of OS.

[0228] According to various embodiments of the present disclosure, at least part of the program module **1510** may be implemented with software, firmware, hardware, or a combination thereof. At least part of the programming module **1510**, for example, may be implemented (for example, executed) by a processor (for example, the processor **1410**). At least part of the programming module **1510** may include a module, a program, a routine, sets of instructions, or a process to perform at least one function, for example.

[0229] According to various embodiments of the present disclosure, by integrating and analyzing a variety of information in real time through collaboration between electronic devices, accurate information such as an exercise portion specific exercise amount may be provided.

[0230] Additionally, according to various embodiments of the present disclosure, by using IoT, various and accurate information to which conditions appropriate for a user are applied may be provided in time.

[0231] The term “module” used in various embodiments of the present disclosure, for example, may mean a unit including a combination of at least one of hardware, software, and firmware. The term “module” and the term “unit”, “logic”, “logical block”, “component”, or “circuit” may be interchangeably used. A “module” may be a minimum unit or part of an integrally configured component. A “module” may be a minimum unit performing at least one function or part thereof. A “module” may be implemented mechanically or electronically. For example, “module” according to various embodiments of the present disclosure may include at least one of an application-specific integrated circuit (ASIC) chip performing certain operations, field-programmable gate

arrays (FPGAs), or a programmable-logic device, all of which are known or to be developed in the future.

[0232] According to various embodiments of the present disclosure, at least part of a device (for example, modules or functions thereof) or a method (for example, operations) according to this disclosure, for example, as in a form of a programming module, may be implemented using an instruction stored in computer-readable storage media. When at least one processor (for example, the processor **1320**) executes an instruction, it may perform a function corresponding to the instruction. The non-transitory computer-readable storage media may include the memory **1330**, for example.

[0233] The non-transitory computer-readable storage media may include hard disks, floppy disks, magnetic media (for example, magnetic tape), optical media (for example, CD-ROM, and DVD), magneto-optical media (for example, floptical disk), and hardware devices (for example, ROM, RAM, or flash memory). Additionally, a program instruction may include high-level language code executable by a computer using an interpreter in addition to machine code created by a compiler. The hardware device may be configured to operate as at least one software module to perform an operation of various embodiments of the present disclosure and vice versa.

[0234] A module or a programming module according to various embodiments of the present disclosure may include at least one of the above-mentioned components, may not include some of the above-mentioned components, or may further include another component. Operations performed by a module, a programming module, or other components according to various embodiments of the present disclosure may be executed through a sequential, parallel, repetitive or heuristic method. Additionally, some operations may be executed in a different order or may be omitted. Or, other operations may be added.

[0235] Moreover, the embodiments disclosed in this specification are suggested for the description and understanding of technical content but do not limit the range of the present disclosure. Accordingly, the range of the present disclosure should be interpreted as including all modifications or various other embodiments based on the technical idea of the present disclosure.

[0236] The above-described embodiments of the present disclosure can be implemented in hardware, firmware or via the execution of software or computer code that can be stored in a recording medium such as a CD ROM, a Digital Versatile Disc (DVD), a magnetic tape, a RAM, a floppy disk, a hard disk, or a magneto-optical disk or computer code downloaded over a network originally stored on a remote recording medium or a non-transitory machine readable medium and to be stored on a local recording medium, so that the methods described herein can be rendered via such software that is stored on the recording medium using a general purpose computer, or a special processor or in programmable or dedicated hardware, such as an ASIC or FPGA. As would be understood in the art, the computer, the processor, microprocessor controller or the programmable hardware include memory components, e.g., RAM, ROM, Flash, etc. that may store or receive software or computer code that when accessed and executed by the computer, processor or hardware implement the processing methods described herein. In addition, it would be recognized that when a general purpose computer accesses code for implementing the processing shown herein, the execution of the code transforms the gen-

eral purpose computer into a special purpose computer for executing the processing shown herein. Any of the functions and steps provided in the Figures may be implemented in hardware, software or a combination of both and may be performed in whole or in part within the programmed instructions of a computer. No claim element herein is to be construed under the provisions of 35 U.S.C. 112, sixth paragraph, unless the element is expressly recited using the phrase “means for”. In addition, an artisan understands and appreciates that a “processor” or “microprocessor” may be hardware in the claimed disclosure. Under the broadest reasonable interpretation, the appended claims are statutory subject matter in compliance with 35 U.S.C. §101.

What is claimed is:

1. An electronic device, comprising:
 - an output module;
 - a communication module configured to allow communication with at least one of a first electronic device and a second electronic device; and
 - at least one processor, operatively coupled to the communication module, configured to:
 - receive exercise portion information indicating at least a part of a muscle group affected by an exercise performed by a user from the first electronic device,
 - receive exercise amount information including at least one of pressure applied to a part of a muscle group, moving time, moving speed, and moving acceleration measured while a user performs an exercise from the second electronic device, and
 - determine exercise information including a respective amount of exercise for each exercise portion based on at least the received exercise portion information and the received exercise amount information, and
 - control the output module to output the exercise information.
2. The electronic device of claim 1, wherein the electronic device comprises the first electronic device or the second electronic device.
3. The electronic device of claim 1, wherein the exercise portion information is based on at least one of:
 - input information received from a user,
 - specified information indicating at least expected a part of a muscle group affected by an exercise performed by a user,
 - information generated by at least one sensor included in the first electronic device,
 - and information generated by at least one sensor included in the second electronic device.
4. The electronic device of claim 3, wherein the specified information comprises exercise portion information corresponding to at least one of exercise place information indicating designation of a location where an exercise on a specified exercise type can be performed by a user, exercise device information, and exercise auxiliary device information, and is stored in at least one of a storage module included in the first electronic device and an external storage device communicatively connected through wired and/or wireless communication.
5. The electronic device of claim 3, wherein at least one of the information generated through the at least one sensor included in the first electronic device, and the information generated through the at least one sensor included in the second electronic device comprises:

pattern information indicating an operation of the first electronic device or second electronic device respectively during execution of an exercise method,

wherein the pattern information is stored in at least one of a storage module included in the first electronic device and second electronic device respectively, and an external storage device in communication with the electronic device through wired and/or wireless communication.

6. The electronic device of claim 1, wherein the second electronic device measures the exercise amount information through at least one of:

at least one sensor included in the first electronic device, and

at least one sensor included in the second electronic device.

7. The electronic device of claim 1, wherein the exercise information comprises at least one of: user's body information, comprising at least one of user's age, sex, weight, height, blood pressure, heart rate, muscle volume, body fat, and body mass index,

exercise detail information, comprising at least one of a portion of a user's body corresponding to an exercise performed, an exercise amount, a portion-specific exercise amount based on the portion of the user's body and the exercise amount, an exercise type, an exercise name, an exercise intensity, an exercise frequency, an exercise time, a caloric consumption amount based on the user's body information and the exercise amount, a target exercise amount value, and a remaining value to complete of the target exercise amount value, and

exercise list information comprises at least one of an exercise type, an exercise name, an exercise intensity, an exercise frequency, an exercise time, and an order of execution for a plurality of exercises, each corresponding to an exercise to be performed.

8. The electronic device of claim 1, wherein:

the first electronic device, the second electronic device, and the electronic device are Internet of Things (IoT) enabled devices communicatively connected to an IoT platform through wired and/or wireless communication; and

the IoT platform is configured to generate user-specific integrated information identified by each user based of the exercise portion information received from the first electronic device, the exercise amount information received from the second electronic device, and the exercise information determined the electronic device, and store the generated user-specific integrated information.

9. The electronic device of claim 8, wherein the IoT platform is communicatively connected to an external storage device storing at least one of exercise place information indicating designation of a location where an exercise on a specified exercise type can be performed by a user, exercise device information, exercise auxiliary device information, and the user specific integrated information, through wired and/or wireless communication.

10. The electronic device of claim 1, wherein the at least one processor controls the output module to output at least one of voice information corresponding to the exercise information, and at least one of a text and image corresponding to the determined exercise information.

- 11.** An method in an electronic device, comprising:
 receiving, via a communication module, exercise portion information indicating at least a part of a muscle group affected by an exercise performed by a user from a first electronic device;
 receiving exercise amount information including at least one of pressure applied to a part of a muscle group, moving time, moving speed, and moving acceleration measured while a user performs an exercise from a second electronic device;
 determining, by at least one processor, exercise information including a respective amount of exercise for each exercise portion based on at least the received exercise portion information and the received exercise amount information, and
 controlling an output module to output the exercise information.
- 12.** The method of claim **11**, further comprising at least one of:
 outputting the exercise information by the first electronic device; and
 outputting the exercise information by the second electronic device.
- 13.** The method of claim **11**, wherein the first electronic device determines the exercise portion information is based on at least one of:
 input information received from a user,
 specified information indicating at least expected a part of a muscle group affected by an exercise performed by a user,
 information generated by at least one sensor included in the first electronic device, and
 information generated by at least one sensor included in the second electronic device.
- 14.** The method of claim **13**, wherein the determining the exercise portion information further comprises:
 determining the exercise portion information is based on the specified information corresponding to at least one of: exercise place information indicating designation of a location where an exercise on a specified exercise type can be performed by a user, exercise device information, and exercise auxiliary device information, and
 storing the specified information in at least one of a storage module included in the first electronic device and an external storage device communicatively connected through wired and/or wireless communication.
- 15.** The method of claim **13**, wherein the determining the exercise portion information further comprises:
 determining the exercise portion information is based on the information generated by at least one sensor included in the first electronic device or the second electronic device corresponding to a pattern information indicating an operation of the first electronic device or second electronic device respectively during execution of an exercise method, and
 storing the pattern information in at least one of a storage module included in the first electronic device and second electronic device respectively, and an external storage device in communication with the electronic device through wired and/or wireless communication.
- 16.** The method of claim **11**, wherein the second electronic device measures the exercise amount information through at least one of:
 at least one sensor included in the first electronic device, and
 at least one sensor included in the second electronic device.
- 17.** The method of claim **11**, further comprising determining the exercise information is based on at least one of:
 user's body information, comprising at least one of user's age, sex, weight, height, blood pressure, heart rate, muscle volume, body fat, and body mass index,
 exercise detail information, comprising at least one of a portion of a user's body corresponding to an exercise performed, an exercise amount, a portion-specific exercise amount based on the portion of the user's body and the exercise amount, an exercise type, an exercise name, an exercise intensity, an exercise frequency, an exercise time, a caloric consumption amount based on the user's body information and the exercise amount, a target exercise amount value, and a remaining value to complete of the target exercise amount value, and
 exercise list information, comprising at least one of an exercise type, an exercise name, an exercise intensity, an exercise frequency, an exercise time, and an order of execution for a plurality of exercises, each corresponding to an exercise to be performed.
- 18.** The method of claim **11**, further comprising:
 connecting the first electronic device, the second electronic device, and the electronic device are Internet of Things (IoT) enabled devices communicatively connected to an IoT platform through wired and/or wireless communication;
 generating user-specific integrated information identified by each user based of the exercise portion information received from the first electronic device, the exercise amount information received from the second electronic device, and the exercise information determined by the electronic device; and
 storing the generated user-specific integrated information.
- 19.** The method of claim **18**, wherein the connecting the first electronic device, the second electronic device, and the electronic device further comprises connecting to an external storage device storing at least one of exercise place information indicating designation of a location where an exercise on a specified exercise type can be performed by a user, exercise device information, exercise auxiliary device information, and the user specific integrated information, through wired and/or wireless communication.
- 20.** The method of claim **11**, wherein the controlling an output module to output the exercise information further comprises outputting at least one of voice information corresponding to the exercise information, and at least one of a text and image corresponding to the determined exercise information.

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