EXERCISE DEVICE WITH ON BOARD PERSONAL TRAINER

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Abstract

An exercise device with an on board personal trainer is provided. The exercise device comprises a frame, a movable element operatively coupled to the frame, a resistance assembly coupled to the frame and to the movable element such that the movable element moves against resistance provided by the resistance assembly, and a console coupled to the frame and electrically coupled to the movable element and/or the resistance assembly. The console is configured to display a menu structure to enable a user to select an exercise program, wherein the console provides graphical and audio instructions regarding the selected exercise program, such that the console enables (i) selection of a desired exercise program, (ii) a graphical display of the selected exercise program, and (iii) audio instructions relating to the selected exercise program. The on board personal trainer also keeps track of the user's repetitions and sets of a particular exercise.
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Fig. 7
Fig. A
Fig. C
Fig. D
Fig. E1
Fig. F
Fig. 1
Fig. J
Fig. M
EXERCISE DEVICE WITH ON BOARD PERSONAL TRAINER

RELATED APPLICATIONS


BACKGROUND OF THE INVENTION

[0002] 1. The Field of the Invention

[0003] This invention generally relates to exercise equipment and, more specifically, to equipment used for strength training and/or toning of muscles.

[0004] 2. The Relevant Technology

[0005] Exercise machines for strength training and/or toning of muscles are commonplace. As opposed to aerobic exercise machines such as treadmills, elliptical machines and stair climbers, strength training machines—typically referred to as anaerobic machines—often require familiarity with the machines before one knows how to use them. That is, upon walking up to a strength training machine in a gym today, one is usually bewildered as to how the machine works. This dilemma is particularly troublesome with some of the modern machines that offer multiple strength training exercises on a single machine.

[0006] Further, in a training environment, those exercising on equipment for strength training and/or muscle toning are in constant need for motivation or encouragement by coaches or trainers. Some people, particularly those who have sufficient resources, hire personal coaches or fitness trainers to do just that. A personal trainer will follow a trainee through a workout, showing the trainee which exercises to perform to build or tone certain areas of one’s body, how to perform those exercises or any exercise desired, and provide motivation and encouragement along the way.

[0007] Further, in a training environment, those exercising on equipment for strength training and/or muscle toning are in constant need for keeping track of their progress on a given exercise. For example, one such exerciser performing a military press exercise must keep track of not only the sets of such exercise, but also the repetitions within each set. Such record-keeping can be burdensome, especially when one is trying to focus on the exercise as well as keeping track of the progress.

BRIEF SUMMARY OF THE INVENTION

[0008] An exercise device with an on board personal trainer is provided. The on board personal trainer provides both graphical and audio instructions regarding a selected exercise program upon selection of such program by a user. Also, the on board personal trainer keeps track of the user’s repetitions and sets of the user’s particular exercise at a given time.

[0009] Specifically, the exercise device comprises a frame, a movable element operatively coupled to the frame, a resistance assembly coupled to the frame and to the movable element such that the movable element moves against resistance provided by the resistance assembly, and a console coupled to the frame and electrically coupled to the movable element and/or the resistance assembly. The console is configured to display a menu structure to enable a user to select an exercise program, wherein the console provides graphical and audio instructions regarding the selected exercise program, such that the console enables (i) selection of a desired exercise program, (ii) a graphical display of the selected exercise program, and (iii) audio instructions relating to the selected exercise program.

[0010] According to another embodiment, the exercise device further comprises a microcontroller, a user interface electrically coupled to the microcontroller, wherein the user interface has a plurality of user inputs, and a display screen electrically coupled to the microcontroller, wherein the display screen displays operating parameters of the exercise device, instructions relating to exercises to be performed, and/or parameters for the user of the exercise device. This embodiment also may include one or more ports for receiving data or instructions, the one or more ports being linked to the microcontroller. The one or more ports also may include a physical port configured to receive data from a storage device insertable or otherwise connectable to the console. Alternatively, the one or more ports may also include a wireless port, an infrared port, a microwave port, or another port capable of receiving or transmitting data or information via electromagnetic radiation carrier waves.

[0011] Further embodiments, the exercise program further comprises at least one control signal, the microcontroller controlling the exercise device in response to the at least one...
control signal. In certain of these embodiments, at least a portion of the at least one control signal is audibly presented by means of an audio output device associated with the exercise device.

[0012] According to one embodiment, the console provides audio instructions and/or motivational content regarding how a selected exercise program is to be performed and further provides graphical instructions demonstrating graphically how the selected exercise program is to be performed. In this embodiment, the console includes a display screen that displays graphically a representation of an exerciser demonstrating how an exercise program is to be performed. In this embodiment, the console further provides audio instructions telling the user how to perform the exercise program and further shows the user how to perform the exercise program by showing on the display a representation of an individual performing the exercise program. Further, in this embodiment, the graphical instructions may comprise an animation or a video presentation of an exerciser. In this embodiment, prior to performing an exercise program, the user watches the graphical instructions and/or listens to the audio instruction regarding how to perform the exercise program.

[0013] According to certain embodiments of the exercise device of the present invention, the movable element comprises a cable and pulley system. In some embodiments, the resistance assembly comprises an arm movably coupled to the frame and to the cable and pulley system, the arm coupled to at least one resilient member. In these embodiments, the at least one resilient member is a resilient member selected from the group consisting of a shock, an elastic band, and a spring.

[0014] Certain embodiments of the exercise device of the present invention further comprise a storage structure associated with the console, such storage structure storing the exercise programming. The storage structure comprises a removable storage structure or non-removable storage structure, wherein the removable storage structure comprises a removable flash memory card, a solid state memory device, or a USB enabled memory device.

[0015] According to another embodiment, the console is configured to maintain a record of progress of a user of the exercise device. In certain embodiments, the console provides the record of such progress in a graphical and/or audio form. In some embodiments, the console counts repetitions of a given exercise. In some embodiments, the console counts sets of a given exercise. The console provides the record of such progress on a recurrent basis, which may be provided on a daily, weekly or monthly basis, for example.

[0016] According to certain embodiments, the console further comprises at least one output device and at least one input device. In some embodiments, the at least one output device and the at least one input device comprises at least one touch-sensitive visual display. In some embodiments, the at least one output device comprises at least one audio delivery device.

[0017] According to another embodiment, the exercise device of the present invention comprises a frame, a movable element operatively coupled to the frame, and a console coupled to the frame and electrically coupled to the movable element. In this embodiment, the console is configured to display a menu structure to enable a user to select an exercise program, wherein the console provides graphical and audio instructions regarding the selected exercise program prior to the user performing the selected exercise program.

[0018] According to another embodiment, the exercise device of the present invention comprises at least one element movable during performance of an exercise by an exerciser, and a console electrically coupled to the at least one element and having a microcontroller capable of controlling the at least one element. In this embodiment, the console includes at least one display capable of presenting graphical and audio instructions regarding an exercise program selected from a plurality of exercise programs accessible by the console, the graphical instructions illustrating performance of the exercise program prior to the performance of the exercise by the exerciser.

[0019] These and other objects and features of the present invention will become more fully apparent from the following description and appended claims, or may be learned by the practice of the invention as set forth hereinafter.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] To further clarify the above and other advantages and features of the present invention, a more particular description of the invention will be rendered by reference to specific embodiments thereof which are illustrated in the appended drawings. It is appreciated that these drawings depict only typical embodiments of the invention and are therefore not to be considered limiting of its scope. The invention will be described and explained with additional specificity and detail through the use of the accompanying drawings in which:

[0021] FIG. 1 shows a perspective view of an embodiment of the exercise device of the present invention.

[0022] FIG. 2 shows an enlarged, cut-away view of the area where an arm connects to a flange on the backrest of the exercise device of FIG. 1.

[0023] FIG. 3 shows an alternate perspective view of the exercise device of FIG. 1.

[0024] FIG. 4 shows an alternate perspective view of the exercise device of FIG. 1.

[0025] FIG. 5 shows an alternate perspective view of the exercise device of FIG. 1 with various possible locations in which its arms may be rotated and positioned for different exercises.

[0026] FIG. 6 shows an enlarged view of the resistance assembly of the exercise device of FIG. 1.

[0027] FIG. 7 shows an enlarged, cut-away front view of the personal trainer of the exercise device of FIG. 1.

[0028] Figure A shows the main menu screen of the console of the personal trainer of the exercise device of FIG. 1.

[0029] Figure B shows the manual mode screen of the console of the personal trainer of the exercise device of FIG. 1.

[0030] Figure C shows the progress mode screen of the console of the personal trainer of the exercise device of FIG. 1.
Figure D shows the FEMALE DAILY WORKOUT mode screen of the console of the personal trainer of the exercise device of FIG. 1.

Figure E1 shows a screen where the exercise "Reverse Lunges" is being explained to the exerciser.

Figure E2 shows another screen where the exercise "Reverse Lunges" is being explained to the exerciser.

Figure F shows the TARGET MUSCLE mode screen of the console of the personal trainer of the exercise device of FIG. 1.

Figure G shows the ARMS mode screen of the console of the personal trainer of the exercise device of FIG. 1.

Figure H shows the BUILD & TONE mode screen of the console of the personal trainer of the exercise device of FIG. 1.

Figure I shows the DISPLAY SETTING mode screen of the console of the personal trainer of the exercise device of FIG. 1.

Figure J shows the AUDIO SETTINGS mode screen of the console of the personal trainer of the exercise device of FIG. 1.

Figure K shows a screen where the exercise "Standing Biceps Curl" is being explained to the exerciser.

Figure L shows a screen where the exercise "Triceps Pushdown" is being explained to the exerciser.

Figure M shows a screen where the exercise "Seated Chest Press" is being explained to the exerciser.

Figure N shows a screen where the exercise "Standing Chest Fly" is being explained to the exerciser.

Figure O shows a screen where the exercise "Hip Extension" is being explained to the exerciser.

Figure P shows a screen where the exercise "Hip Flexion" is being explained to the exerciser.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention may be embodied in other specific forms without departing from its spirit or essential characteristics. The described embodiments are to be considered in all respects only as illustrative and not restrictive. The scope of the invention is, therefore, indicated by the appended claims rather than by the foregoing description. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.

The present invention provides an exercise machine that enables a user to perform a variety of exercises with the benefit of an "on-board" personal trainer. FIG. 1 shows a perspective view of an embodiment of the exercise device of the present invention. As shown in FIG. 1, the exercise device 100 comprises a frame 15, a base plate 10, a seat 20, a backrest 30, arms 40 and 50 that can be rotated and positioned according to the user's wishes for a desired exercise, and a console 70 that serves as part of an on-board personal trainer 90. Each arm 40 and 50 is movably connected to the frame 15 by means of respective "shoulders" or flanges 42 and 52 and are adjustable by means of respective knobs 41 and 51 that move into and out of holes 43 and 53 located on each flange 42 and 52, respectively. Arms 40 and 50 further respectively comprise pulleys 49 and 59 attached at their distal ends, cable strands 44 and 54, and handles 45 and 55 attached to the cable strands for performing all arm-related exercises.

FIG. 2 shows an enlarged, cut-away view of the area where arm 50 connects to flange 52 on the backrest 30 by means of the adjustment knob 51, flange 52 and its holes 53. Arm 40 connects to flange 42 in the same manner.

FIG. 3 shows another perspective view of the exercise device 100 of FIG. 1. In FIG. 3, the arms 40 and 50 have been rotated differently from that of FIG. 1 so that they form a 180 degree angle and are in position for a different exercise. FIG. 4 shows another perspective view of the exercise device 100 of FIG. 1. In FIG. 4, the arms 40 and 50 have been rotated differently from that of FIGS. 1 and 3 so that they are in position for yet a different exercise. FIG. 5 shows another perspective view of the exercise device 100 with the various possible locations in which the arms 40 and 50 may be rotated and positioned for different exercises.

The exercise device of the present invention can be a multi-exercising strength training device and body toning device that has a variety of different weight training systems thereon that use technology that is described, or substantially described in issued patents and/or pending patent applications. The rotating, selecttable position arms and technology relating thereto, are described, or substantially described in U.S. Pat. No. 6,458,061 to Simonson, entitled Cable Crossover Exercise Apparatus, application Ser. No. 09/864,246, filed May 25, 2001, which is incorporated herein in its entirety by reference. Further examples of such rotating arms are available in U.S. Pat. No. 7,169,093 to Simonson et al., entitled Cable Crossover Exercise Apparatus, application Ser. No. 10/358,993, filed Feb. 5, 2003, which is incorporated herein in its entirety by reference.

FIG. 6 shows an enlarged view of the resistance assembly of the exercise device 100 of FIG. 1, which includes a cut-away side view of the rear area of the exercise device 100 where the user can adjust the resistance level on the exercise machine 100. FIG. 6 shows a rear base 12, the frame 15, the backrest 30, and the resistance assembly, which comprises two gas springs 60, cable strands 64, resistance arm 66, a pulley 68, and an adjustment handle 62. To increase the amount of resistance, the user squeezes the adjustment handle 62 and moves the handle 62, which is connected to the gas springs 60, along adjustment arm 66 and away from the backrest 30, and then releases the handle 62 in the desired position on the adjustment arm 66. To decrease the amount of resistance, the user squeezes the handle 62 and moves the handle 62 toward the backrest 30, and then releases the handle in the desired location on the adjustment arm 66. Note that cable strands 64 and cable strands 44 and 54 are part of the same cable, all interconnected for the performance of exercises. Strands 64 are connected to cables 44 and 54 through rear base 12 and frame 15, as shown in FIG. 6.

Additional details with regard to the cable and pulley system with resistance technology relating thereto is described or substantially described in U.S. Patent Publication No. 2004/0157709, application Ser. No. 10/770,275
In one embodiment, an iFIT Card is inserted into the slot 80 on the console 70 of the exercise device 100 and the personal trainer 90 guides the user through a workout routine based on the information on the iFIT Card. Additional information on the iFIT Card and iFIT Card technology can be found at www.iFIT.com, where iFIT Cards can be purchased.

Additionally, exercise programming, including, for example, motivational content and/or control signals and other information can be provided through the port located on or adjacent to the console using technologies, systems, methods such as described in (i) U.S. patent application Ser. No. 11/315,682, filed Dec. 21, 2005, to entitled Methods and Systems for Controlling an Exercise Apparatus Using a Portable Data Storage Device; (ii) U.S. patent application Ser. No. 11/314,153, filed Dec. 21, 2005, entitled Methods and Systems for Controlling an Exercise Apparatus Using a USB Compatible Portable Remote Device; (iii) U.S. patent application Ser. No. 10/856,676, filed May 28, 2004, entitled Methods and Systems for Controlling an Exercise Apparatus Using a USB Compatible Portable Remote Device, and/or (iv) U.S. patent application Ser. No. 09/776,410, filed Feb. 2, 2001, entitled Methods and Systems for Controlling An Exercise Apparatus Using a Portable Remote Device, each of which are incorporated herein in their entirety by reference.

The following describes one embodiment of how the personal trainer 90 of exercise device 100 operates. Note that this is merely one embodiment and that variations are contemplated within the spirit of the invention and the scope of the claims.

The console 70 offers an array of features designed to make an exerciser’s workouts more effective. The console 70 has a manual mode, two interactive routines, five target muscle workouts, four build and tone workouts, and the iFIT Interactive Workout System.

When using the manual mode, you (as the exerciser) can enter the numbers of sets and repetitions (“reps”) that you plan to complete and set a length of time to rest between sets. As you perform strength exercises, the console 70 will track your progress according to the settings you enter. To track your progress, such as the number of sets and/or reps completed, exercise device 100 may include a repetition sensor that is adapted to determine your progress and communicate that information to console 70. Examples of repetition sensors and other related technology that can be used with exercise device 100 are disclosed in the patent application entitled Repeat Sensor in Exercise Equipment, U.S. Patent Publication No. 2006/0035768, and application Ser. No. 10/916,687, filed Aug. 11, 2004, which is incorporated herein in its entirety by reference.

With each of the two interactive workout routines, there are five daily workouts designed to help you build and tone your muscles. During each daily workout, the voice of the personal trainer 90 will prompt you to perform a variety of strength exercises while guiding you through an effective strength-training workout.

The console 70 also offers five target muscle workouts that help you work specific areas of the body. The voice of the personal trainer 90 will guide you through each target muscle exercise.

The console 70 features four build and tone workouts for the upper and lower body. During each build and...
tone workout, the voice of the personal trainer 90 will prompt you to perform a series of strength exercises.

[0063] The iFIT Interactive Workout System enables the console 70 to accept iFIT Cards containing workout programs designed to help you achieve specific fitness goals.

[0064] Before the console 70 is used, the exercise machine 100 must be plugged in to a power source, typically a 120-volt outlet. When “plugged in,” the console 70 display will light and a tone will sound. The console 70 will then be ready for use.

[0065] The following demonstrates how the illustrated embodiment of the personal trainer 90 of exercise device 100 operates. Again, note that this is merely one embodiment and that variations are contemplated within the spirit of the invention and the scope of the claims.

[0066] How to Use the Manual Mode

[0067] 1. Touch the screen or press the ON/RESET button 76 to turn on the console 70.

[0068] When you turn on the console 70, the display will light. A tone will then sound and the main menu will appear on the screen, as shown in Figure A. If desired, touch the DISPLAY button A10 in the lower left corner of the screen to adjust the display settings, or touch the AUDIO button A12 in the lower right corner of the screen to adjust the audio settings (see below for specific instructions).

[0069] 2. Select the manual mode.

[0070] When the main menu appears on the screen, touch the MANUAL button A14 to select the manual mode.

[0071] 3. Enter workout settings.

[0072] After you select the manual mode, the manual mode screen will appear, as shown in Figure B. You can now enter the following workout settings:

[0073] Sets—Touch the SETS UP/DOWN buttons B10 to enter the desired number of sets. You can enter 1 to 25 sets.

[0074] Reps—Touch the REPS UP/DOWN buttons B12 to enter the desired number of reps. You can enter 1 to 25 reps.

[0075] Rest—Touch the REST UP/DOWN buttons B14 to adjust the rest period between sets. The setting will change in increments of 5 seconds. The rest period can be from 5 seconds to 4 minutes long.

Touch the OK button B16 to save your settings and continue with the workout. If desired, touch the BACK button B18 to return to the main menu.


[0077] Perform repetitions of the exercise of your choice with a slow, steady motion. The voice of the personal trainer 90 and the display 72 will count the repetitions as you perform them. At the end of each set, rest for the amount of time shown in the display 72. Then, resume performing repetitions and sets as indicated in the display 72.

[0078] 5. Follow your progress with the display.

[0079] Figure C shows an image of the screen that tracks your progress. As you exercise, the upper section C20 of the display 72 will show the current set and the total number of sets to be performed. The lower section C22 of the display will show the current rep and the total number of reps to be performed in each set. Note that the cables must move at least 12 inches (30 cm) for repetitions to be counted by the console. Although not shown in Figure C, the lower left section C24 of the display also shows the rest period and counts down the time remaining in the rest period. Although Figure C shows one’s progress on a relatively short recurrent basis, it is contemplated that the exercise device 100 can track one’s progress on a longer basis, such as a daily, weekly and monthly basis. This longer progress tracking is made possible, e.g., with the use of iFIT technology and/or the SD cards 73 set forth above.

[0080] If desired, touch the BACK button C10 to return to the manual mode screen, shown in Figure B. Touch the MAIN MENU button C12 to return to the main menu, shown in Figure A.

[0081] 6. Continue entering workout settings and performing exercises as desired.

[0082] When the workout is finished, the manual mode screen (Figure B) will appear. See steps 3 and 4 above and continue entering workout settings and performing exercises as desired.

[0083] When you are finished exercising in the manual mode, touch the BACK button or press the ON/RESET button 76 to return to the main menu (Figure A).

[0084] 7. When you are finished exercising, the console will turn off automatically.

[0085] If the cables do not move, the screen is not touched, and the buttons are not pressed for a few minutes, the console 70 will turn off and the display will be reset. Note that when the demo mode is turned on (see below), the console 70 will enter the demo mode after sitting idle for five minutes. The screen 72 will then show an animation. To exit the demo mode, touch the screen or press the ON/RESET button 76.

[0086] How to Use a Daily Workout

[0087] 1. Touch the screen or press the ON/RESET button 76 to turn on the console 70, which will bring you to the Main Menu screen of Figure A.

[0088] 2. Select a male or female workout routine.

[0089] Touch the MALE DAILY WORKOUT button A16 to select a workout routine designed for men. Touch the FEMALE DAILY WORKOUT button A18 to select a workout routine designed for women.

[0090] 3. Select a daily workout.

[0091] If you choose the FEMALE DAILY WORKOUT, you are brought to the screen shown in Figure D. Each workout routine consists of five different workouts to be performed on different days of the week. To select a daily workout, touch the name of the desired workout on the screen. If desired, touch the BACK button D10 or the MAIN MENU button D12 to return to the main menu.

[0092] Note that the voice of a personal trainer 90 will guide you through the workout. To adjust the volume or select an audio setting for your personal trainer 90, touch the AUDIO button D14 to change the audio settings (see below
for specific instructions). During the workout, you can touch the AUDIO button D14 and change the audio settings any time the AUDIO button D14 appears on the screen.

4. Begin the daily workout.

After selection of a daily workout, but prior to performance of the daily workout, the voice of a personal trainer 90 will begin explaining the first exercise (after explaining how to set up the machine 100 for the exercise). Simultaneously, the name of the exercise and an animation of the exercise will appear on the screen 72. Figure E1 is an example of one such screen where the exercise “Reverse Lunge” is being explained to the exerciser. Note that as an exercise is being explained to the exerciser, the exercise is being animated and demonstrated by a character on the monitor 72. Alternatively, the monitor 72 may provide a video presentation of someone performing the exercise being explained. To help illustrate the animation feature, Figure E2 shows another view of the exercise “Reverse Lunge” being explained to the exerciser, depicting the character in a position different than that shown in Figure E1. Touch the READY button E10 at any time during the explanation to begin the exercise. As soon as you press the READY button E10 or as soon as the explanation ends, you are prompted to begin the exercise, as the progress screen appears, which is shown in Figure C.

Perform repetitions of the exercise as described by the personal trainer 90. Exercise with a slow, steady motion. The personal trainer 90 and the display will count the repetitions as you perform them. At the end of a set, you rest for the amount of time shown in the display. Then, resume performing repetitions and sets as indicated in the display.

If desired, touch the BACK button C10 to return to the exercise explanation. Touch the FORWARD button C14 to skip to the next exercise. Touch the MAIN MENU button C12 to return to the main menu.

5. Continue the daily workout.

When you have completed the first exercise, the personal trainer 90 will explain the next exercise in the workout and then guide you through the next exercise.

The program will continue until the last exercise in the workout is completed. The words WORKOUT COMPLETE will then appear on the screen 72.

If desired, press the ON/RESET button 76 to return to the main menu (Figure A).

Follow your progress with the display of progress screen (Figure C).

When you are finished exercising, the console 70 will turn off automatically.

How to Use a Target Muscle Workout

1. Touch the screen or press the ON/RESET button 76 to turn on the console 70.

2. Access the target muscle workout menu.

From the Main Menu of Figure A, touch the TARGET MUSCLE button A20 to access the target muscle workout menu, as shown in Figure F.

3. Select the desired target muscle workout.

The target muscle workout menu allows you to choose among five target muscle workouts. To select a target muscle workout, touch the name of the desired workout on the screen.

If desired, touch the BACK button F10 or the MAIN MENU button F12 to return to the main menu. Note that the voice of a personal trainer 90 will guide you through the workout. To adjust the volume or select an audio setting for your personal trainer 90, touch the AUDIO button F14 to change the audio settings (see below for specific instructions). During the workout, you can touch the AUDIO button F14 and change the audio settings any time the AUDIO button F14 appears on the screen.

4. Select the desired target exercise.

When you select a target muscle workout, a target exercise menu will appear on the screen. For example, if you select the ARMS button F16, the screen shown in Figure G will appear that contains a selection of exercises for the arms. To select a target exercise, touch the name of the desired target exercise on the screen 72. If necessary, touch the SCROLL UP/DOWN buttons that may appear on the screen 72 or press the up and down buttons 78 next to the iFIT slot 80 to view all the target exercises on the menu.

If desired, touch the BACK button G10 to return to the target muscle workout menu. Touch the MAIN MENU button G12 to return to the main menu. Touch the AUDIO button G14 to change the audio settings.

5. Perform the target exercise.

The target exercise is performed in the same manner as it is during the “DAILY WORKOUT.”

6. Continue the target muscle workout.

When you have performed a target exercise, the name of that exercise will appear crossed out on the target exercise menu (Figure G).

Continue selecting and performing target exercises as described in steps 4 and 5 above.

When you have performed all the target exercises in a target muscle workout, the words WORKOUT COMPLETE will appear on the screen 72.

If desired, press the ON/RESET button 76 to return to the main menu.

Note that if you touch the BACK button G10 or the MAIN MENU button G12 to return to the target muscle workout menu or the main menu at any time during a target muscle workout, the console 70 will be reset and the record of target exercises you have completed will be lost.

Follow your progress with the display of progress screen (Figure C).

When you are finished exercising, the console 70 will turn off automatically.

How to Use a Build and Tone Workout

1. Touch the screen 72 or press the ON/REST button 76 to turn on the console 70.
2. Access the build and tone workout menu.

From the Main Menu (Figure A), touch the BUILD & TONE button A22 to access the build and tone workout menu, as shown in Figure H.

3. Select the desired build and tone workout.

The build and tone workout menu (Figure H) allows you to choose among two upper body and two lower body workouts. To select a build and tone workout, touch the name of the desired workout on the screen.

If desired, touch the BACK button H10 or the MAIN MENU button H12 to return to the main menu. Note that the voice of a personal trainer 90 will guide you through the workout. To adjust the volume or select an audio setting for your personal trainer 90, touch the AUDIO button H14 to change the audio settings (see below for specific instructions). During the workout, you can touch the AUDIO button H14 and change the audio settings any time the AUDIO button H14 appears on the screen.

4. Begin the build and tone workout.

When you select a build and tone workout, the voice of a personal trainer 90 will begin explaining the first exercise (just as “Reverse Lunges” is explained in Figures E and F). Simultaneously, the name of the exercise and an animation of the exercise will appear on the screen 72. Touch the READY button at any time during the explanation to begin the exercise.

Perform repetitions of the exercise as described by the personal trainer 90. Exercise with a slow, steady motion. The personal trainer 90 and the display 72 will count the repetitions as you perform them, as shown in the progress screen of Figure C. At the end of a set, you rest for the amount of time shown in the display 72. Then, resume performing repetitions and sets as indicated in the display 72.

If desired, touch the BACK button C10 to return to the exercise explanation. Touch the FORWARD button C14 to skip to the next exercise. Touch the MAIN MENU button C12 to return to the main menu of Figure A.

5. Continue the build and tone workout.

When you have completed the first exercise, the personal trainer 90 will explain the next exercise in the workout and then guide you through the exercise.

The program will continue in this way until the last exercise in the workout is completed. The words WORKOUT COMPLETE will then appear on the screen 72.

6. Follow your progress with the display of progress screen (Figure C).

7. When you are finished exercising, the console 70 will turn off automatically.

How to Use an iFIT Workout

1. Touch the screen or press the ON/RESET button 76 to turn on the console 70.

2. Insert an iFIT Card 73 and select a program.

To use an iFIT workout, insert an iFIT Card 73 into the iFIT slot 80; make sure that the iFIT Card 73 is oriented so the metal contacts are face-down and are facing the slot 80. When the iFIT Card 73 is properly inserted, an indicator 82 to the right of the slot 80 will light and an iFIT menu will appear on the screen.

Next, select the desired workout on the iFIT Card by touching the name of the workout on the screen.

A moment after you select a workout, the voice of a personal trainer 90 will begin guiding you through your workout. iFIT workouts function in the same way as build and tone workouts. To use the iFIT workout, follow steps 5 to 7 of the build and tone workout routine.

5. How to Adjust the Display Settings

When you touch the DISPLAY button (e.g., A10 on Figure A) on a screen, you will access the display settings screen, as shown in FIG. 1. The display settings screen allows you to make the following display adjustments:

LCD Contrast—To adjust the LCD contrast for the screen, touch the LCD CONTRAST UP/DOWN buttons H10. To restore the default contrast setting, touch the DEFAULT button H12. Note that it is possible to adjust the contrast beyond viewable limits. If this occurs, simply touch the DEFAULT button H12 and restore the default contrast setting.

Demo Mode—Touch the DEMO MODE check box H14 to toggle the demo mode on and off. The demo mode is turned on when a check mark appears on the check box H14. When the demo mode is turned on the console will enter the demo mode after sitting idle for five minutes. The screen 72 will then show an animation. To exit the demo mode, touch the screen 72 or press the ON/RESET button 76.

LCD Backlight—Touch the LIGHT check box H16 to toggle the LCD backlight on and off. The LCD backlight is turned on when a check mark appears in the check box H16.

Touch the OK button H18 to save the LCD contrast and demo mode settings and exit the display settings screen. Note that the LCD backlight setting will not be saved in memory for the next time you turn on the console.

5. How to Adjust the Audio Settings

When you touch the AUDIO button (e.g., A12 of Figure A) on a screen, you will access the audio settings screen, as shown in Figure J. The audio settings screen allows you to make the following audio adjustments:

Personal Trainer Audio Setting—Touch the PERSONAL TRAINER check box J10 to toggle the voice of the personal trainer 90 on and off. When a check mark appears in the PERSONAL TRAINER check box J10, the voice of the personal trainer 90 will guide you through a workout with basic instructions.

When no check mark appears in the PERSONAL TRAINER check box J10, the voice of the personal trainer 90 will be turned off.

Full Instructions Audio Setting—Touch the FULL INSTRUCTIONS check box J12 to toggle the detailed personal trainer instructions on and off. When check marks appear in both the FULL INSTRUCTIONS and PERSONAL TRAINER check boxes J12.
and J10, the voice of the personal trainer 90 will guide you through a workout with detailed instructions.

[0155] Volume—To adjust the volume level, touch the volume bar J14 to move the indicator to the desired volume level.

[0156] Touch the OK button J16 to save the audio settings and exit the audio settings screen.

[0157] As set forth herein, it is observed that the console 70 comprises a storage structure 71 that stores exercise programming. As set forth above, the storage structure 71 may comprise a removable storage structure (e.g., an SD card 73) or non-removable storage structure (e.g., all of the programming available in the programs described herein, such as MALE DAILY WORKOUT or TARGET MUSCLE WORKOUT, for examples). In addition to the SD card 73, it is contemplated that the removable storage structure may comprise a removable flash memory card, a solid state memory device, or a USB enabled memory device. Further, it is contemplated that instead of a physical slot 80 for an SD card 73, such a port for receiving data or instructions may be a wireless port, an infrared port, a microwave port, or another port capable of receiving or transmitting data or information via electromagnetic radiation carrier waves.

[0158] Also note that the console 70 further comprises a microcontroller 75 such that the user interface (including all of the user inputs described herein and the screen 72, which can be touch-sensitive) is electrically coupled to the microcontroller. Further, it is contemplated that during operation, the screen 72 may display operating parameters of the exercise device 100. Also, it is contemplated that the exercise device have the capability not only of passively guiding the user through exercises, but actively controlling the exercise device, for example, by controlling at least one movable element. For example, it is contemplated that the exercise device 100, by means of the microcontroller 75, will be able to control at least one movable element, e.g., one of the arms 40 or 50 of exercise device 100 of FIG. 1 during performance of an exercise by an exerciser.

[0159] Additional examples of screen images for exercises that can be explained by the personal trainer 90, thereby guiding the user through the respective exercise, are shown in Figures K-P. Specifically, Figure K shows a graphical representation of an exerciser demonstrating a “STANDING BICEPS CURL” exercise. Figure L shows a graphical representation of an exerciser demonstrating a “TRICEPS PUSHDOWN” exercise. Figure M shows a graphical representation of an exerciser demonstrating a “SEATED CHEST PRESS” exercise. Figure N shows a graphical representation of an exerciser demonstrating a “STANDING CHEST FLY” exercise. FIG. 0 shows a graphical representation of an exerciser demonstrating a “HIP EXTENSION” exercise. Figure P shows a graphical representation of an exerciser demonstrating a “HIP FLEXION” exercise. As noted above, although each of Figures K-P are a still graphical representation, the actual demonstration on the monitor 72 of each exercise is an animation.

[0160] Accordingly, as set forth herein, the present invention provides an exercise machine 100 with all of the benefits of a personal trainer 90. The personal trainer 90 provides instruction by way of audio and video on how to perform a variety of exercises. Further, the personal trainer 90 provides motivation and encouragement as the user performs exercises, e.g., by keeping track of the user's progress and counting the repetitions and sets of a given exercise. This progress tracking is particularly helpful because it allows the exerciser to focus on the exercise and proper form, rather than having the additional burden of having to keep track of his or her own progress.

[0161] This feature of providing motivational content and programming relating thereto and other related technology is described or substantially described in the patent application entitled Systems and Methods for Providing an Improved Anaerobic Exercise Device with Motivational Programming, U.S. application Ser. No. 10/674,911, filed Sep. 29, 2003, Patent Publication No. 2004/0127335, which is incorporated herein in its entirety by reference.

[0162] Although multiple embodiments of the invention are described herein in detail, it will be understood by those skilled in the art that variations may be made thereto without departing from the spirit of the invention or the scope of the claims. For example, a movable element as set forth in the claims below may include handles attached to a cable and pulley system of a strength training apparatus, an endless belt of a treadmill, the pedals and/or pedal cranks of a bicycle, or the foot pedals of an elliptical trainer. Further, for example, as set forth above, the resistance assembly may include a weight stack or other resistance means known in the art in addition to that described herein.

What is claimed is:

1. An exercise device comprising:
   a frame;
   a movable element operatively coupled to the frame; and
   a console coupled to the frame and electrically coupled to the movable element, the console configured to display a menu structure to enable a user to select an exercise program, wherein the console provides graphical and audio instructions regarding the selected exercise program.

2. An exercise device as recited in claim 1, wherein the graphical and audio instructions comprising a video and/or animated demonstration of the selected exercise program, wherein the audio instructions correspond to the video and/or animated demonstration of the selected exercise program, the graphical and audio instructions being provided prior to the performance of the selected exercise program by the exerciser.

3. An exercise device as recited in claim 1, wherein the graphical instructions comprise a video and/or animated demonstration of the selected exercise program, wherein the audio instructions correspond to the video and/or animated demonstration of the selected exercise program, the graphical and audio instructions being provided prior to the performance of the selected exercise program by the exerciser.

4. An exercise device comprising:
   a frame;
   a movable element operatively coupled to the frame;
   a resistance assembly coupled to the frame and to the movable element such that the movable element moves against resistance provided by the resistance assembly; and
   a console coupled to the frame and electrically coupled to the movable element and/or the resistance assembly, the console configured to display a menu structure to
enable a user to select an exercise program, the console being adapted to provide graphical and audio instructions regarding the selected exercise program, such that the console enables (i) selection of a desired exercise program, (ii) a graphical display of the selected exercise program, and (iii) audio instructions relating to the selected exercise program.

5. An exercise device as recited in claim 4, wherein the console comprises:

a microcontroller;
a user interface electrically coupled to the microcontroller, the user interface having plurality of user inputs; and
a display electrically coupled to the microcontroller, the display displaying operating parameters of the exercise device, instructions relating to exercises to be performed, and/or parameters for the user of the exercise device.

6. An exercise device as recited in claim 5, wherein the exercise program further comprises at least one control signal, the microcontroller controlling the exercise device in response to the at least one control signal.

7. An exercise device as recited in claim 6, wherein at least a portion of the at least one control signal is audibly presented by means of an audio output device associated with the exercise device.

8. An exercise device as recited in claim 4, wherein the console provides audio instructions and/or motivational content regarding how a selected exercise program is to be performed and further provides graphical instructions demonstrating graphically how the selected exercise program is to be performed.

9. An exercise device as recited in claim 8, wherein the console includes a display screen that displays graphically a representation of an exerciser demonstrating how an exercise program is to be performed.

10. An exercise device as recited in claim 9, wherein the console further provides audio instructions telling the user how to perform the exercise program and further shows the user how to perform the exercise program by showing on the display a representation of an individual performing the exercise program.

11. An exercise device as recited in claim 8, wherein the graphical instructions further comprise an animation.

12. An exercise device as recited in claim 8, wherein the graphical instructions further comprise a video presentation of an exerciser.

13. An exercise device as recited in claim 4, wherein the movable element comprises a cable and pulley system.

14. An exercise device as recited in claim 4, further comprising a storage structure associated with the console, the storage structure storing the exercise programming.

15. An exercise device comprising:
a frame;
a movable element operatively coupled to the frame; and
a console coupled to the frame and in electrical communication with the movable element, the console adapted to allow a user to select an exercise program from a menu of exercise programs, the console being adapted to provide graphical and audio instructions regarding how to perform the selected exercise program prior to the user performing the selected exercise program.

16. An exercise device as recited in claim 15, wherein the graphical instructions regarding the selected exercise program comprise an animation of an exerciser illustrating how to perform the selected exercise program.

17. An exercise device as recited in claim 16, wherein the audio instructions comprise a voice that describes the exercise program being illustrated in the graphical instructions.

18. An exercise device as recited in claim 15, wherein the console comprises a display screen adapted to provide the graphical instructions to the user.

19. An exercise device comprising:
an element movable during performance of an exercise by an exerciser;
a console in electrical communication with the element and having a microcontroller capable of controlling the at least one element, the console comprising
a storage structure adapted to store a plurality of exercise programs, and
a display capable of presenting graphical and audio instructions regarding an exercise program selected from the plurality of exercise programs, the graphical instructions illustrating performance of the exercise program prior to the performance of the exercise by the exerciser.

20. An exercise device as recited in claim 19, wherein the audio instructions are presented to the user at the same time as the graphical instructions, the audio instructions corresponding to the graphical instructions to enable the exerciser to watch the graphical instructions and listen to the audio instructions simultaneously to learn how to perform the selected exercise program.

21. An exercise device as recited in claim 19, wherein the console further comprises at least one output device and at least one input device.

22. An exercise device as recited in claim 21, wherein the at least one output device and the at least one input device comprise at least one touch-sensitive visual display.

23. An exercise device as recited in claim 21, wherein the at least one output device comprises at least one audio delivery device.

24. A method for teaching and performing an exercise program, comprising:

providing an exercise device, the exercise device comprising:
a frame;
a movable element operatively coupled to the frame; and
a console electrically coupled to the frame and/or the movable element, the console having a) a microcontroller capable of controlling the movable element, b) a storage structure adapted to store a plurality of exercise programs, and c) at least one display capable of presenting i) a menu structure for selecting an exercise program from the plurality of exercise programs, and ii) graphical and audio instructions regarding the exercise program selected from the plurality of exercise programs;
selecting an exercise program from the plurality of exercise programs using the menu structure presented on the at least one display of the console;

presenting, on the at least one display, graphical and audio instructions regarding the selected exercise program; and

performing the selected exercise program after watching and listening to the graphical and audio instructions.

25. The method for teaching an exercise program to an exerciser as recited in claim 24, wherein the graphical instructions comprise an animated and/or video presentation of an exerciser performing the selected exercise program, and wherein the audio instructions comprise a voice explaining how to perform the exercise program illustrated in the graphical instructions.

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