A virtual trainer exercise system including at least one exercise equipment device including a video user interface, an audio input, an audio output, and a data port for receiving a portable storage device, a server in communication with the exercise equipment device, a database in communication with the server, the database including one or more user profiles, software executing on the exercise equipment device for receiving user data from the portable storage device, software executing on the server for accessing a user profile corresponding to the user data, and software executing on the server for generating an interactive virtual trainer based on the user profile and providing the interactive virtual trainer to the user via the user interface and audio output.
Access virtual trainer server

New User?

YES

Register

Design virtual trainer

NO

Log-in

Select workout preferences

Download data to memory device

FIG. 4
601 Input memory device

603 Access user profile

605 Generate interactive visual trainer

607 Provide interactive virtual trainer

609 Implement workout parameters and begin workout

611 Provide virtual trainer feedback

613 Workout modification? (YES)

615 Receive user input

617 Provide virtual trainer confirmation/feedback

FIG. 6
VIRTUAL PERSONAL TRAINING DEVICE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority benefits under 35 §U.S.C. 119(e) of the U.S. Provisional Application No. 60/784,690 filed on Mar. 22, 2006, incorporated herein by reference.

FIELD OF THE INVENTION

[0002] The invention relates generally to fitness training, and more specifically to a system and method for providing an interactive virtual fitness trainer to users in real-time.

BACKGROUND OF THE INVENTION

[0003] As personal fitness becomes more popular, people are looking for better and more effective ways to exercise. People further seek exercise programs which keep their interest and motivation levels high. One of the best ways for people who go to a gym, and even those who workout at home, to achieve a good workout is to enlist the help of personal trainers.

[0004] Personal trainers are individuals who usually have a fitness training background and who provided personal training services to an individual customer. These trainers instruct the exerciser how to properly use the equipment, design personalized exercise routines, give encouragement throughout the workout and even, if necessary, give the exerciser help, such as a spot. Another benefit of personal trainers is that they often provide their customers with the needed incentive and motivation to continue to workout and perform, and may also revise the exercise routine over time based on performance and results. However, these, real, personal trainers can become extremely expensive and may not be available at all times. Often gyms have a limited number of trainers on staff and therefore it is also difficult to change trainers if desired.

[0005] As technology and the internet have developed, various methods of overcoming the problem with personal trainers have arisen. Many aerobic exercise machines now come with predetermined programs that the user can tailor to fit his/her exercise needs and desires. Furthermore, systems have been developed to compare a user's current and previous performance and adjust the exercise equipment accordingly.

[0006] Methods to instruct users on the use of equipment and design personal exercise routines have also developed. Videos have been produced to provide the details on how to use exercise equipment and computer programs have been written that will custom tailor an exercise routine to a user's abilities and requirements.

[0007] For example, U.S. Patent Application Publication 2005/0164833 discloses software that allows users to choose a virtual personal trainer and select their own exercise routine. The virtual trainer demonstrates the use of the gym equipment on a computer and then the users follow the routine at their own pace and at a place and time of their own convenience. However, the virtual trainer is not there to encourage, motivate and assist the user while he/she is exercising.

[0008] None of these technological replacements for real personal trainers have all of the aspects of a real personal trainer. None provide the on site encouragement, motivation, incentive or assistance that a personal trainer can give. It is therefore desired to provide a system and method for creating and implementing an interactive virtual personal trainer that can be used on various exercise equipment. It is also desired to provide a system and method for providing a virtual trainer which provides a planned exercise routine and real time motivation based on past performance.

SUMMARY OF THE INVENTION

[0009] Accordingly, it is an object of the present invention to provide a customizable interactive virtual trainer for providing an exercise routine and motivation and encouragement during the exercise routine. It is also an object of the present invention to provide a system and method which retains exercise data and history and provides the exercise routine and motivation based on the exercise data and history.

[0010] These and other objectives are achieved by providing a virtual trainer exercise system including at least one exercise equipment device including a video user interface, an audio input, an audio output, and a data port for receiving a portable storage device, a server in communication with the exercise equipment, a database in communication with the server, the database including one or more user profiles, software executing on the exercise equipment device for receiving user data from the portable storage device, software executing on the server for accessing a user profile corresponding to the user data, and software executing on the server for generating an interactive virtual trainer based on the user profile and providing the interactive virtual trainer to the user via the user interface and audio output.

[0011] Also provided is a method of providing a user with a virtual trainer in situ on exercise equipment including the steps of receiving user data from a portable memory device, accessing a user profile corresponding to the user data, generating an interactive virtual trainer, displaying the interactive virtual trainer on a video display, implementing a workout routine on the exercise equipment, receiving speech input from the user and providing a response to the speech input via the interactive virtual trainer.

[0012] Further provided is a method of generating an interactive virtual trainer and workout regimen for use in situ on exercise equipment, including the steps of accessing a server via the Internet, creating a username and password, entering one or more personal data elements corresponding to the user for storage in a user profile, selecting a customizable virtual trainer for storage in the user profile, selecting trainer attributes indicative of at least one of an appearance and a behavior of the virtual trainer, providing one or more workout parameters, and receiving a workout routine based on the one or more workout parameters.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] FIG. 1 is a schematic view of a virtual trainer exercise system according to the present invention.

[0014] FIG. 2 is another schematic view of the system shown in FIG. 1.

[0015] FIGS. 3A and B are exemplary video user interfaces employable by the system shown in FIGS. 1 and 2.

[0016] FIG. 4 is a method of providing a virtual trainer employable by the system shown in FIGS. 1 and 2.

[0017] FIGS. 5A and 5B are exemplary screenshots generated by the system shown in FIGS. 1 and 2.
FIG. 6 is another method of providing a virtual trainer employable by the system shown in FIGS. 1 and 2.

DETAILED DESCRIPTION OF THE INVENTION

FIG. 1 shows a system for providing a virtual trainer according to the present invention. The system includes one or more exercise equipment devices 110, such as treadmills, stationary bicycles, elliptical machines, Stairmasters, weight lifting machines, etc. These exercise equipment devices 110 may be purchased by a user for in-home use or used at a fitness facility or gym. Preferably the system includes a network of exercise equipment, either in a particular facility or across a plurality of facilities.

Each device 110 includes a data port for receiving profile data 142 from a profile storage device 140, a video user interface 214, and an audio input/output 212. The profile storage device 140 may be any digital storage device that is sufficient to identify a user, such as a portable memory stick or a USB flash drive or a database of user profiles. The video user interface 214 includes an LCD monitor for displaying an interactive virtual trainer according to the present invention and/or a touch screen interface for receiving manual input from the user.

The audio input/output 212 includes a voice recognition application such as Natural Internet Voice Recognition ("NIVP") to receive speech data and/or commands from the user. The audio input/output 212 includes a microphone, or a wireless communication receiver, e.g., Bluetooth interface, for communicating with a wireless headset. The audio input/output 212 further includes one or more speakers for providing audio portions of the virtual trainer. The speakers may be included in a headset (e.g., Bluetooth headset).

The NIVP includes software executing on the server 100 and/or exercise equipment device 110 for recognizing and interpreting speech input from the user 200. Based on the interpreted speech input, the system or software thereof formulates commands to send to the exercise equipment device 110 to adjust a workout routine and/or interactive with the virtual trainer. The NIVP also receives speech commands to start and stop the workout. For new users, the NIVP may further receive information necessary to create a new user profile.

The system further includes one or more workstations 140. The workstation 140 may be a personal computer remotely accessible to the system or a terminal (e.g., kiosk) located in the vicinity of the exercise equipment device 110. Via the workstation 140, a user may provide input 132 to the server 100 to generate his/her user profile, and download profile data 142 to a profile storage device 140. For example, the user can select a trainer and customize the trainer’s attributes via the workstation 130. The user can also select attributes of his/her workout routine. However, user input 132 and profile data 142 can also be generated and stored to the server and/or profile storage device 140 directly through the exercise equipment 110, e.g., via the user interface 214 and audio input 212 thereon.

User input 132 and user profiles are stored in one or more databases 112 accessible by the server 100. The databases 112 may further include reference such information regarding fitness, health and/or particular fitness equipment which is accessible to the users (e.g., via interaction with their virtual trainer). The server 100 further communicates with the exercise equipment device 110 (e.g., via the internet 120) before, during or after a workout routine. The server 100 transmits trainer data, such as data indicative of an interactive virtual trainer, and workout regiments to the exercise equipment device 110 and receives workout results 150 therefrom. The results 150 (e.g., workout history) are stored by the server 100 and used by the system to update workout routines and further generate the interactive trainer. For example, the interactive virtual trainer may provide relevant motivation and feedback to the user based on his/her past workout performance.

On exercise equipment devices 110 that are weight lifting machines, the devices may be equipped with hydraulic technology to change the load associated with the exercise, as well as provide assistance (e.g., a spot) when the system senses a user 200 is in need of help or when a user communicates to the virtual trainer that he/she needs assistance. Furthermore, the exercise equipment devices 110 may be equipped with power seats that automatically adjust to profile data 142.

FIG. 2 shows a system for using the exercise equipment device 110. The exercise equipment device 110 contains a processor 210 for executing software, an audio input/output device 212 and a user interface 214. The processor 210 downloads profile data 142 from the profile storage device 140. The profile data 142 may include a complete user profile, any portion thereof or a trigger to enable the system to access the user profile from the server 100. For example, the processor 210 may use the profile data 142 to access the server 100 and retrieve trainer data and/or workout regiments 152 corresponding to the user.

Based on the user profile, the system generates an interactive virtual trainer (e.g., 520) for continuous display and interaction with the user 200 during his/her workout. In some embodiments, the system provides a three-dimensional display of the virtual trainer to the user. The virtual trainer provides motivation, encouragement and feedback including audio and video trainer data 222/224 to the user during the workout. The system further receives receive input from the user 200 to the virtual trainer via the user interface 215 and/or the audio input device 212. The virtual trainer may therefore ask targeted questions of the user (e.g., confirmations, desired equipment settings, etc.) and answer questions and responds to commands from the user. For example, the virtual trainer may answer questions about fitness and/or the particular equipment, and may implement commands such as changes to the workout routine in progress.

The system employs the NIVP software to interpret questions from the user 200 and provide the appropriate responses. The system further responds to user’s 200 requests by adjusting the workout routine if appropriate and providing necessary motivation, encouragement and/or incentives, etc. The virtual trainer 520 may be able to respond to its name and/or be able to refer to the user 200 by his/her name. During and/or upon completion of the workout, workout data 150 or workout results are transmitted to the server 100. The workout data 150 is stored in the corresponding user profile for access by the user and used in future workouts (e.g., by the virtual trainer). For example, a virtual trainer may suggest increasing a duration or weight to a user based on his/her performance in a previous workout.
FIGS. 3A and 3B are examples of the exercise equipment device 110 including a user interface 214. The user interface 214 provides the visual depiction (e.g., 3-D visual depiction) of the virtual trainer 520 to the user and/or other workout 232 and trainer 230 data. The user 200 can manually input information and/or preferences into the user interface 214 to adjust workouts and/or control other aspects of the system, including the appearance of the virtual trainer 520, the trainer’s attributes, demeanor, intensity and/or involvement.

FIG. 4 depicts a method of creating a user profile, a virtual trainer, and a workout routine. The user 200 first accesses the virtual trainer server, e.g., via a website of the system (step 401). The server and/or website is accessible via a workstation of the system, or through a user interface of exercise equipment of the system. The website and/or exercise equipment 110 may then ask if the user 200 is a new or returning user (step 403).

If the user 200 is a new user, the user is prompted to register (step 405). Registration may include entering or speaking the user’s 200 personal information, including but not limited to name, address, payment information, age, and/or weight. Some information, such as heart rate and weight, may be received by sensors of the system included on the exercise equipment device 110 or other devices of the system. Once registration is complete, the user is prompted to design a virtual trainer 520. If the user 200 is not a new user, the user may simply be prompted to log-in (step 409). Once logged-on, the server 100 may access the database 112 to retrieve the user’s stored information and, if desired, modify the user’s virtual trainer.

Once the user 200 has designed a virtual trainer (step 407) or log-in (step 409), the user is prompted to provide workout preferences (step 411). The step of providing workout preferences may include selecting what personal training devices 110 to use and/or deciding what muscle group to work on. The workout preferences may also include a preferred workout duration, number of repetitions and/or sets, a workout intensity, etc. A user may provide general workout preferences, detailed workout preferences or no preferences at all. Based on the preferences provided, if any, the system generates a workout routine and prompts the user for confirmation of the routine. In some embodiments, a user may add music to his/her user profile. For example, user profiles may include any number of songs and play lists to be provided to the user during his/her workout. Finally, once the workout is created, profile data is downloaded to the profile storage device 140.

The user profiles of present invention may be securely maintained by the server 100 or, at the user’s option, displayed in whole or part on a webpage. For example, the system may include an online community for fitness minded people to meet and network. Users can view other user’s profiles, fitness goals and progress. Users can further post photos and personal advertisements, ask and answer questions via chat rooms, share experiences via blogs, etc.

FIGS. 5A and 5B show screenshots generated by the software used to customize a virtual trainer 520. A virtual trainer 520 may be chosen from a database of already created virtual trainers or may be generated and/or customized by each user. Numerous aspects of the virtual trainer may be customized including but not limited to, hair style and color 504, clothing 506, age 508, skin tone 510, gender, demeanor, voice characteristics, body type and size, eye color, facial features, etc. Additionally, e.g., in the for-home use version, the virtual trainer 520 may be customizable to be nude and/or use profanity. Furthermore, the virtual trainer 520 can be designed to have a celebrity likeness, this aspect of the system may be accessible for a fee.

FIG. 6 depicts a method of using the personal training device 110. Before beginning to exercise, the user 200 inserts the profile storage device 140 into the personal training device 110 (step 601). Then, the processor 210 accesses a user profile corresponding to information provided on the profile storage device (step 603). Using the profile data 142, the processor 210 may use software to communicate with the server 100 to upload the trainer data and/or workout regiment 152. Once the processor 210 has all the necessary data, including but not limited to the trainer data and workout regiment 152, the processor 210 generates and provides the interactive virtual trainer 520 to the user via the user interface 214 and audio input/output 212 (step 605).

The virtual trainer 520 proceeds to ask the user 200, via the user interface 214, audio device 212 or any other communications means, if the user 200 is ready to begin the workout and confirms workout parameters. After the user 200 communicates, via the user interface 214, audio device 212 or any other communications means, that he/she is ready to begin the workout, the processor 210 may implement the workout parameters from the user profile and begins the workout (step 609).

During the workout, the processor 210 may receive data regarding the user’s 200 performance from the personal training device 110 and may use software to instruct the virtual trainer 520 to provide the appropriate feedback to the user 200 (step 611). Such feedback may include motivation, encouragement to work harder, incentive to improve performance, and accolades for good performance. Such feedback is communicated visually through the user interface 214 and/or audibly through the audio device 212 and/or speakers attached to the exercise equipment 110.

During the workout, the processor 210 continuously monitors the user’s 200 commands, through the audio device 212, the user interface 214 and/or any other communications means. If at any time during and/or before the workout the user 200 wishes to modify the workout (steps 613, 615), the processor 210 makes the necessary adjustments, including but not limited to length of the workout, intensity of the workout, number of sets and/or repetitions, etc. Once the modifications to the workout are made, the virtual trainer 520 confirms the adjustments with the user (step 617).

Although the invention has been described with reference to a particular arrangement of parts, features and the like, these are not intended to exhaust all possible arrangements or features, and indeed many modifications and variations will be ascertainable to those of skill in the art.

What is claimed is:
1. A virtual trainer exercise system comprising:
at least one exercise equipment device including a video user interface, an audio input, an audio output, and a data port for receiving a portable storage device;
a server in communication with said exercise equipment device;
a database in communication with said server, said database including one or more user profiles;
software executing on said exercise equipment device for receiving user data from the portable storage device; software executing on said server for accessing a user profile corresponding to the user data; and software executing on said server for generating an interactive virtual trainer based on the user profile and providing the interactive virtual trainer to the user via the user interface and audio output.

2. The system according to claim 1, wherein said virtual trainer is an animated human form.

3. The system according to claim 1, wherein each of the one or more user profiles includes virtual trainer parameters and workout parameters.

4. The system according to claim 3, wherein the workout parameters include at least one of a level, a speed, a resistance, and a time.

5. The system according to claim 3, further comprising: software executing on said exercise equipment device for implementing a workout routine based on the workout parameters.

6. The system according to claim 5, further comprising: speech recognition software executing on said server for interpreting a speech input received via the audio input.

7. The system according to claim 6, further comprising: software executing on said exercise equipment device for revising the workout routine based on the interpreted speech input.

8. The system according to claim 5, wherein the video user interface is a touch-screen video user interface, wherein the system further comprises software executing on said exercise equipment device for revising the workout routine based on a user input received via the video user interface.

9. The system according to claim 3, further comprising: software executing on said server for updating the one or more user profiles and customizing the virtual trainer parameters.

10. The system according to claim 9, wherein said software for updating provides for the customization of the interactive virtual trainer’s clothing and dialect.

11. The system according to claim 5, wherein providing the interactive virtual trainer includes providing visual and audio feedback pertaining to the workout routine.

12. The system according to claim 11, further comprising: software executing on said server for receiving performance data from the exercise equipment device, the performance data indicative of the user’s performance of the workout routine, wherein the feedback is based on the performance data.

13. The system according to claim 1, wherein said exercise equipment device is a cardiovascular training device.

14. The system according to claim 1, wherein said exercise equipment device is a hydraulic weight training device, wherein said exercise equipment devices includes one or more sensors for determining when user requires assistance and an emergency off switch.

15. The system according to claim 1, wherein said audio input includes a wireless audio input and a wireless headset for providing speech input to the wireless audio input.

16. The system according to claim 1, wherein said data port is a USB port.

17. The system according to claim 1, further comprising: software executing on said server for providing an interactive website for displaying at least a portion of the user profiles.

18. The system according to claim 17, wherein the interactive website includes one or more fitness chat rooms.

19. A method of providing a user with a virtual trainer in situ on exercise equipment, comprising the steps of: receiving user data to the exercise equipment from a portable memory device; accessing a user profile corresponding to the user data, the user profile stored remote to the exercise equipment; generating interactive virtual trainer based on at least a portion of the user profile; providing the interactive virtual trainer via a video display and audio output of the exercise equipment; and implementing a workout routine in the exercise equipment based on at least a portion of the user profile.

20. The method of claim 19, further comprising the steps of: receiving speech input from the user; and providing a response to the speech input via the interactive virtual trainer.

21. The method of claim 19, further comprising the steps of: accessing a workout history in the user profile; and adjusting the workout routine based on the workout history.

22. The method of claim 19, wherein the step of implementing the workout routine includes prompting user for approval and input.

23. The method of claim 19, further comprising the step of: receiving workout results from the exercise equipment; and storing the workout results in the user profile.

24. A method of generating an interactive virtual trainer and workout regimen for use in situ on exercise equipment, comprising the steps of: accessing a server via the Internet; creating a username and a password; entering one or more personal data elements corresponding to the user for storage in a user profile; selecting a customizable virtual trainer for storage in the user profile; selecting trainer attributes indicative of at least one of an appearance and a behavior of the virtual trainer; providing one or more workout parameters; and receiving a workout routine based on the one or more workout parameters.

25. The method of claim 24, further comprising the step of: downloading at least a portion of a user profile data to a portable storage device for communication to the exercise equipment.

26. The method of claim 24, wherein the personal data elements include at least one of a gender, an age, a weight, and a height.

27. The method of claim 24, wherein the step of selecting trainer attributes includes choosing a gender, attire, and an intensity level.

28. The method of claim 24, wherein the workout parameters include at least one of an exercise equipment device, a level, an intensity, and a duration.