A multimedia system product for use in physical fitness training including a method and system for producing customized physical fitness programs through an internet-based environment. The user is allowed to select the individual components of the exercise video and manipulate motion capture data by using a graphics engine to customize the “look and feel” of the customized workout through available training avatars. The individual components eligible for inclusion are included in a database containing a plurality of audio and visual media files of personal trainers performing exempler exercises. The compiled instructional video is then available for download and installation on a video-enabled personal media player.
METHOD FOR CREATING AND DISTRIBUTING PERSONALIZED FITNESS INSTRUCTION

BACKGROUND OF THE INVENTION

[0001] Field of the Invention

The present field of the invention relates to the field of exercise instruction through media content. More particularly it relates to a system and method for creating truly individualized instructional media for teaching physical skills and movement.

[0002] Background Discussion

Although it has long been held that exercise and physical fitness improves quality of life and potentially extends longevity, the health and fitness industry has changed dramatically in recent years. The perception of physical exercise as an activity has also changed as the population has aged and become more health-focused. From the sole domain of body-builders, physical fitness has reached the mainstream. Exercise has evolved from a luxury item of the wealthy to a necessity for the everyman. The variety of exercises available to the population is growing too, moving beyond basketball, squash and free-weights to varietal yoga, pilates, and spinning, to name a few. Thus, gym memberships and at home exercise equipment are ever increasing in popularity and sales.

[0003] Traditional physical training, whether in a brick-and-mortar gymnasium or at home required instruction. For safety and proper results, an exercise must be executed according to a prescribed form. To execute proper form in exercise, one would need to receive instruction from a personal trainer. Although personal training is the most popular health club program, such instruction is not always the most desirable option, whether for convenience, cost, or modesty. Video and DVD recordings of personal trainers for use at home provide convenience and privacy for exercise, but only provide an exemplar of the proper form. Additionally, the user is unable to transport this visualization of the exercise to the gym with the user. This often creates inappropriate comparisons of the user to the trainer model resulting in the user improperly performing the exercise. As stated, this leads to imperfect results or injuries.

[0004] There are a great many fitness, exercise, or workout videos available to consumers in the market—many produced by celebrities or the celebrity personal trainers. Prepared and pre-packaged exercise programs available on DVD or video are intended for use at home and are not portable. They do not allow the user to travel with the instructions—whether to his or her home gym or when at a hotel fitness center. Nor do such products allow the user to customize his or her workout to meet personal goals, target specific body areas, or accommodate limitations.

[0005] There are existing methods and systems to provide video demonstration training for sports techniques, for example, O’Leary et al., U.S. Pat. No. 5,249,967; Mann, U.S. Pat. No. 5,184,295; Powers, U.S. Pat. No. 5,836,770; Brady-Koontz, U.S. Pat. No. 6,468,886. Methods and systems exist to allow a user to interact, directly and through the internet, with electronic exercise equipment, for example, Waters, US App. 20060229163; Fernandez, et al., U.S. Pat. No. 7,022,048. These methods, like the traditional video exercise tape, are necessarily stationary and do not allow the user portability and choice in exercise surroundings. There are also existing methods for distributing exercise videos which may be played on personal media players, for example, Demas, U.S. Pat. No. 7,056,265; Bartels, US App. 2005020950. And, recently, methods for computers or third-parties to create an exercise program for a user, based on rudimentary information from the user, for example, Wesemann et al., U.S. application Ser. No. 11/383,921; Wesemann et al., U.S. Application 60/682,361; Gray et al., U.S. Application 60/709,626. These methods and systems satisfy some of the desire for portability. However, they create only “best fitting” workouts, but do not produce workouts fully-tailored to the individual user as they do not allow the user complete control over the creation of their exercise program, including the selection of specific exercises and their order of repetition.

[0008] The solution to these problems is to generate an exercise instruction program that is fully selected by the user and generated with the same physical characteristics as the user, but having superior movement patterns. Additionally, this instruction program can be downloaded onto a personal media player for portability.

SUMMARY OF THE INVENTION

[0009] Embodiments of this invention are internet-based systems and programs for creating user-specific multimedia physical instruction.

[0010] Among the characteristics of this invention are the provision of a system that teaches a physical training or exercise movement by providing a model having the same physical characteristics as the particular user. This is done by use of an avatar created by a computer generated model based on user inputs which is then merged with the instructional data so that the avatar—performs the desired exercise.

[0011] The physical training program or instruction is generated directly by the user from a database of exercises. This database of exercises is created using motion capture technology to create the entry files of male and female personal trainers performing exemplars of the specified exercise. Audio instruction files created by personal trainers for the respective demonstrations are also stored in the database, and are key’d to the appropriate demonstration files. This database will be available to the user based on indication of gender and experience level, and will be listed by exercise characteristics, such as muscle groups targeted and whether equipment will be used. The user will create a fully-customized workout routine exercise-by-exercise, rather than by indicating fitness progress and goals and having a third-party compile their routine. The user’s exercise experience can be configured further by indicating desired fitness goals, allowing the user to work different muscle groups in different ways.

[0012] Once satisfied with the customized workout routine, the user can compile the routine. The user specified instruction or workout routine will be merged using computer software with the previously created avatar. The user-specific training videos are then made available to the user, including for download from the system server onto a personal computer. Once installed on the personal computer, the user-specific training video may be further customized by integrating audio media files from the user’s local media library into the training video using an audio mixing module. The audio mixing module incorporates an audio normalizing feature which functions to automatically lower the volume of the incorporated audio files when audio fitness instruction files
are played. The instructional video is then ready for synchronization or installation on the video-enabled personal media player of the user’s choice.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] The exemplification set out herein illustrate the preferred embodiment of the invention, but is neither intended nor should be construed as limiting the scope of the invention in any manner.


[0015] FIG. 2. Shows a block diagram representation of a method for the interaction between the User and the method gateway of the guided-user-interface (“GUI”) in the internet based environment.

[0016] FIG. 3. Shows a block diagram representation of a method for selecting the appropriate sub-exercise database from Exercise Database (18) based on User Data Inputs (7) and the applied filters of the Database Selection Software (6).

[0017] FIG. 4. Shows a block diagram representation of a method for creating Exercise Database (18) through the use of motion capture technology, video recording systems, and animation software to record male and female personal trainers demonstrating exemplars of desired physical fitness movements.

[0018] FIG. 5. Shows a block diagram representation of a method for creating an individualized user Avatar (10) based on the User Data Inputs (7) and animation software (28).

[0019] FIG. 6. Shows a block diagram representation of a method for mixing the Compiled Media File (13) with audio media files residing on the user’s Personal Computer (2) before installing on the Personal Media Player (1).

DETAILED DESCRIPTION OF THE INVENTION

[0020] This invention is a fully customizable video fitness instruction system which is designed for distribution via the internet and viewing over a video-enabled personal media player. It is to be understood that the figures and descriptions of the figures have been simplified to illustrate elements that are relevant for a clear understanding of the present invention, while elimination, for purposes of clarity, elements found in a typical fitness system or internet-based program: those of ordinary skill will recognize other elements which are necessary and/or desirable for the implementation of the present invention.

[0021] The embodiments of the invention described herein relate to methods, systems and/or computer program products for creating and providing video workout or exercise instruction that is customized by and for the user. More particularly, embodiments of the disclose a fully-customized personal training video delivered to the end user via the internet. Final media output is determined by the user from start to finish. The embodiments relate a web-based application existing in a Linux/UNIX or similar environment wherein unique personal training videos are rejoined “on-the-fly” based on user inputs.

[0022] The embodiments may be further defined as a web-based solution that enables the manipulation of motion capture data by using a rendering engine to allow the user to customize the “look and feel” of a customized workout through available training avatars.

[0023] Referring generally to FIG. 1, these personal training videos are not generated “intelligently” by the system based on user inputs including, but not limited to, indicated fitness goals and available equipment. Rather, a database of exercises will be available to the user for selection based on indication of gender and experience level. This database is generated in a motion-capture/animation studio or similar location.

[0024] Referring to FIG. 4, Personal Trainers (20 & 21) are recorded, using motion capture technology (23), demonstrating the desired exercises and/or movements. As movements are specific and may differ based on gender, male and female personal trainers are recorded (20 & 21). Using a rendering engine or other software as necessary, computer files may be made from these recordings of male and female personal trainers performing individual exercises. These files are stored in a fitness database (18) and are indexed according various factors including the gender of the trainer and the demonstrated exercise. The database is further subdivided and/or indexed by additional characteristics, including target muscle groups. Personal trainers also record audio instruction relevant to the demonstrated exercises and/or movements. Audio instruction is indexed to the corresponding video recording and stored in the database. The database is accessed by the user through the internet-based environment.

[0025] A dedicated web-page is maintained in the internet-based environment through a PHP platform. The user interacts with this web-page through a custom guided user-interface (“GUI”). The user initially provides personalized information, including personal statistics. Through this GUI, the user accesses software to create a personalized three-dimensional avatar, or visual alias, reflecting the user’s previously entered personal statistics.

[0026] As shown by FIG. 3, after creating their user specific avatars, the user will specify, through the GUI, filters to be applied to the exercise fitness database (18) to narrow the available exercise components. These filters include, but are not limited to: the type of exercise or fitness instruction desired and his or her fitness experience level. The fitness experience level is designated to prevent injury to a user by a “beginner” user attempting to create an exercise routine using an “expert” exercise. Although an expert will have access to all exercise components in the database, a user with “moderate” experience will be denied access to expert components and a beginner will be denied access to expert and moderate exercises.

[0027] Based on user selections and user provided information (7), computer software (6) accessed through the internet-based environment makes an appropriate “first selection” (19) of files from the fitness database of personal trainers demonstrating the exercises most relevant to the user’s indicated filters (15), including but not limited to gender, experience level, and available equipment. Instead of simply indicating fitness progress and goals and having an exercise program prepared and/or provided for the user, the user will have the opportunity to add exercises one-by-one to a list, creating a fully-customized workout routine muscle group-by-muscle group, exercise-by-exercise. The user’s exercise experience can be configured for a diverse range of exercise goals, including desired fitness goals and targeting different muscle groups in different ways. The user will then review and select his or her desired exercises from the offered selections (19). As the user begins his selection of exercises, the offered selections will vary. As certain exercises should not be
performed within a series or within the same workout for safety or results, the system will remove those exercises from the option list. The user will be informed of what exercises are unavailable and why.

[0028] When satisfied with their exercise selections, the user may compile the selected files into a single media file (11). The compilation is performed via computer software accessible through the GUI and the internet-based environment. The computer software compiles the individual exercise files based on relative and/or absolute server paths, and encodes the produced media file as necessary to preserve the quality of the final product video (11).

[0029] The clips are then merged with transitional media material (12) to extend the video to the length of the subscriber’s desired workout. FIG. 1. Specifically, the software inserts transitional videos between sets of exercise rotations to provide rest or transition time as required by the selected exercises or specified by the user in his or her User Data (7). Audio instruction files, created by personal trainers and stored in the database, are identified for the selected demonstrations according to the database index. These audio instruction files are incorporated into the video by software accessible through the internet-based environment.

[0030] As shown in FIG. 1, the compiled media file is automatically integrated, via software accessed through the internet-based environment, with the subscriber avatar resulting in a video media file of the user’s avatar performing the desired exercises. The video is created in a high definition MPEG-4 media format, or available equivalent or better, and is compressed for delivery. The video will be optimized for the user’s media player of choice. All video content will be delivered in the highest definition available.

[0031] Referring to FIG. 6, a mixing application (29) may be downloaded by the user from the webpage to the user’s personal computer (2). This application includes computer software capable to mix the downloaded video with audio media files residing on the user’s local hard disk. This will allow users to add audio files previously purchased from third-party sources to the instructional video, creating a personalized “soundtrack” for their fitness instruction. The program automatically lowers the volume of the added soundtrack when fitness instruction files are played, and increases the volume of the added soundtrack when audio fitness instruction ends. This mixing tool will be available for download from our website from the user account interface, and customized workouts may come imbedded within this tool for end-user convenience. The multimedia file is then synchronized with the user’s portable multimedia device of choice (1).

[0032] The user’s exercise experience will be supplemented through the webpage. In addition to the ability to create additional workouts, the user will be supported by company staff via the webpage and affiliated services. Additionally, the webpage may host public forums and blogs for the exchange of advice and encouragement. The webpage may also provide complementary information such as nutritional and dietary information. This additional support will help ensure a healthy, motivated, and complete fitness experience.

We claim:
1. A multimedia personal-training system, comprising:
   (a) a user, wherein the user has access to an internet equipped computer;
   (b) a video enabled personal media player, wherein the personal media player is capable of synchronization with the user’s computer;
   (c) an internet-based environment, wherein the internet-based environment comprises a web-page, a guided user interface (“GUI”), and a computer server;
   (d) an exercise database containing one or more transition videos and exercise components, wherein the transition videos and exercise components are stored in computer-readable format;
   (e) a computer software means for accessing the exercise database through the internet-based environment;
   (f) personal-training instructional media specific to the user;
   (g) a computer software means for storing the personal-training instructional media in the internet-based environment;
   (h) a computer software means for accessing the personal-training instructional media in the internet-based environment;
   (i) a means for transmitting the personal-training instructional media to the user’s computer and synchronizing with the video-equipped personal media player.
2. The multimedia system of claim 1, wherein the transition videos are indexed by factors including length and content.
3. The multimedia system of claim 1, wherein the exercise components are further comprised of audio instruction components and video components.
4. The multimedia system of claim 3, wherein the audio instruction components are indexed to corresponding video components.
5. The multimedia system of claim 4, wherein the video components further include personal trainers demonstrating a plurality of physical exercises and movements.
6. A method of creating the video components of claim 5, comprising of
   (a) a means for recording exercise demonstrations;
   (b) animation and/or motion-capture methods;
   (c) computer generated imagery rendering engines; and
   (d) a means for storing the video components in a machine-readable format.
7. The multimedia system of claim 5, wherein the video components are indexed by factors relevant to the user, including gender, target muscle groups, required equipment, and exercise experience level.
8. A method of generating personal-fitness instructional media, comprising the steps:
   (a) processing a plurality of user-specific information;
   (b) generating a first selection of one or more exercise components, wherein the first selection of exercise components is made by comparing the user-specific information, including gender and exercise experience level, with the indexed information in the exercise database;
   (c) generating a second selection of one or more exercise components, wherein the second selection of base audio-video components is made by the user from the first selection of exercise components by means of a guided user interface (“GUI”) through the internet-based environment;
   (d) compiling a sequential series of exercises including the selected exercise components; and
(e) creating a finished media product, wherein a user-specific avatar is integrated with the sequential series of exercises whereby the user appears to be performing the demonstrated exercises.

9. The method of generating personal-fitness instructional media of claim 8, wherein the user-specific information includes:
   personal body statistics, gender, exercise experience level, goals, target muscle groups, available equipment, and length/intensity of workout.

10. The method of generating personal-fitness instructional media of claim 9, further comprising the storage of the user-specific information in a computer readable format wherein the user-specific information is accessible through the internet based environment.

11. The method of generating personal-fitness instructional media of claim 8, further comprising the automatic selection of verbal instruction components according to the second selection of exercise components.

12. The method of generating personal-fitness instructional media of claim 11, further comprising the integration of the verbal instructions with the selected exercise components.

13. The method of generating personal-fitness instructional media of claim 14, further comprising the selection of transition videos based on the desired length/intensity of workout and the cumulative length of the selected exercise components whereby the transition videos are selected to provide time for rest or repetition of the selected exercises by the user.

14. The method of generating personal-fitness instructional media of claim 8, further comprising creating the user-specific training avatar based on user-specific information, including a plurality of body statistics, whereby a multi-dimensional computer image of the user is generated.

15. The method of generating personal-fitness instructional media of claim 8, wherein the finished media product is in a computer-readable format, including MPEG-4 format.

16. A method for integrating audio files stored on user's computer with finished media product, comprising:
   (a) a means for randomly selecting audio files from the user's media library, wherein the audio files include .mp3, .wma, and .aac files;
   (b) a means for importing selected audio files into the finished media product when downloaded on the user's computer; and
   (c) a means for coordinating the volume of the added audio files with the audio components of the finished media product.

   * * * * *