



US 20160228736A1

(19) **United States**

(12) **Patent Application Publication**  
**CUTTINO**

(10) **Pub. No.: US 2016/0228736 A1**

(43) **Pub. Date: Aug. 11, 2016**

(54) **FULL-CORE FITNESS MACHINE AND METHOD**

(52) **U.S. Cl.**  
CPC ..... *A63B 21/068* (2013.01); *A63B 21/4049* (2015.10); *A63B 21/0023* (2013.01)

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(21) Appl. No.: **15/041,751**

(22) Filed: **Feb. 11, 2016**

**Related U.S. Application Data**

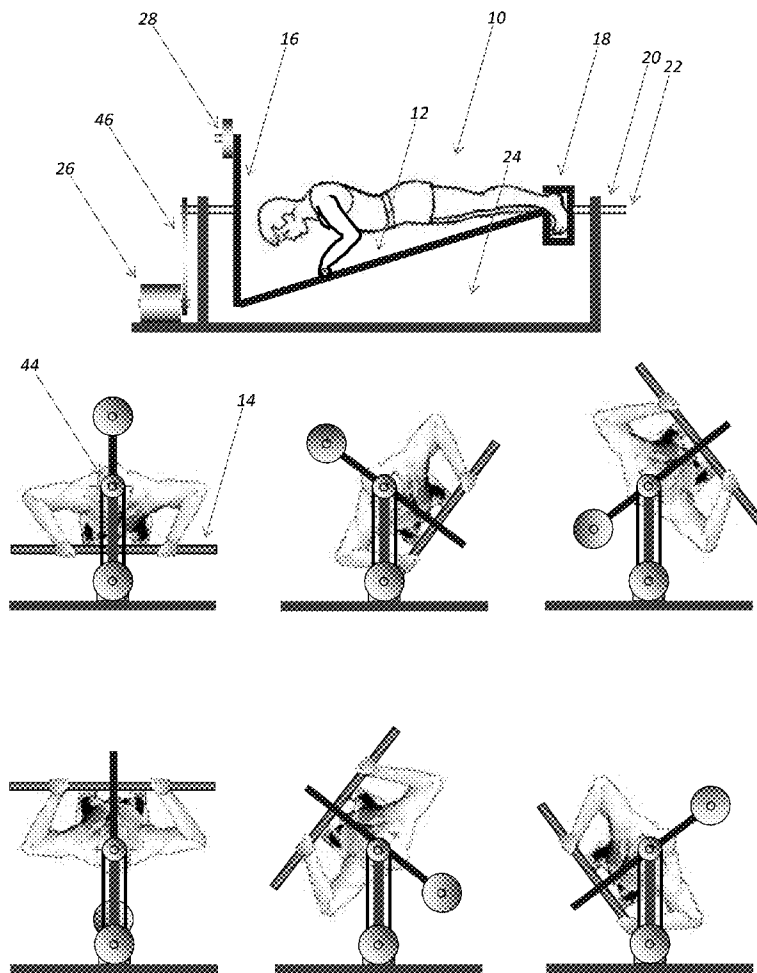
(60) Provisional application No. 62/114,655, filed on Feb. 11, 2015.

**Publication Classification**

(51) **Int. Cl.**  
*A63B 21/068* (2006.01)  
*A63B 21/002* (2006.01)  
*A63B 21/00* (2006.01)

(57) **ABSTRACT**

A fitness machine, including: a frame structure; a spanning bar rotatably coupled to the frame structure, wherein the spanning bar selectively rotates about a central axis; a gripping bar coupled to the spanning bar; and a retention mechanism coupled to the spanning bar; wherein, when a user grasps the gripping bar with his or her hands and puts his or her feet in the retention mechanism and the spanning bar is selectively rotated about the central axis, the user is also rotated about the central axis. Optionally, the spanning bar selectively rotates about the central axis by operation of an electric motor coupled to the spanning bar. Optionally, the spanning bar also selectively rotates about a secondary access that is offset from the central axis. Optionally, the gripping bar is translatable/rotatable with respect to the spanning bar. The spanning bar is disposed at an angle with respect to the frame structure such that a center of gravity of the user substantially coincides with the central axis.



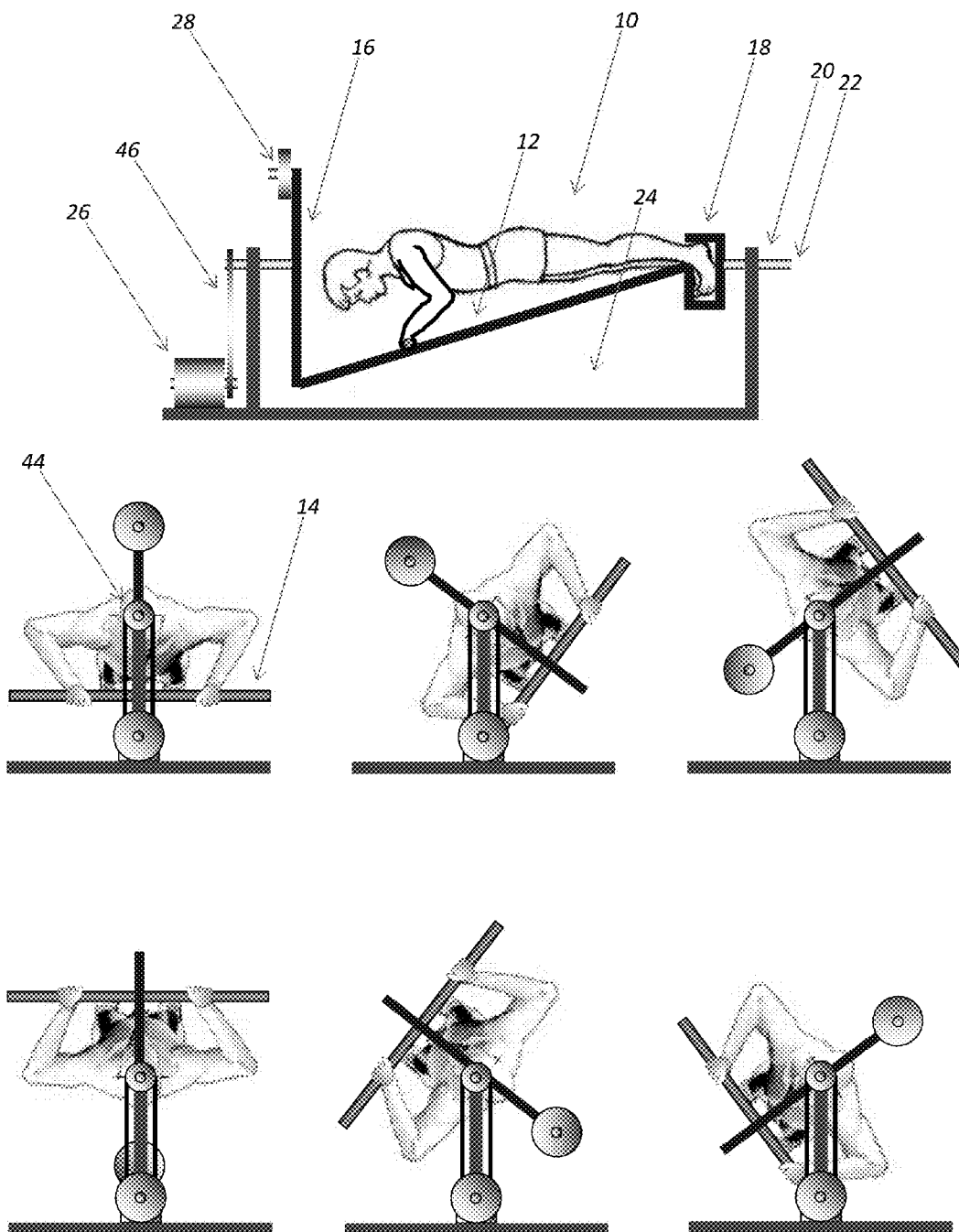
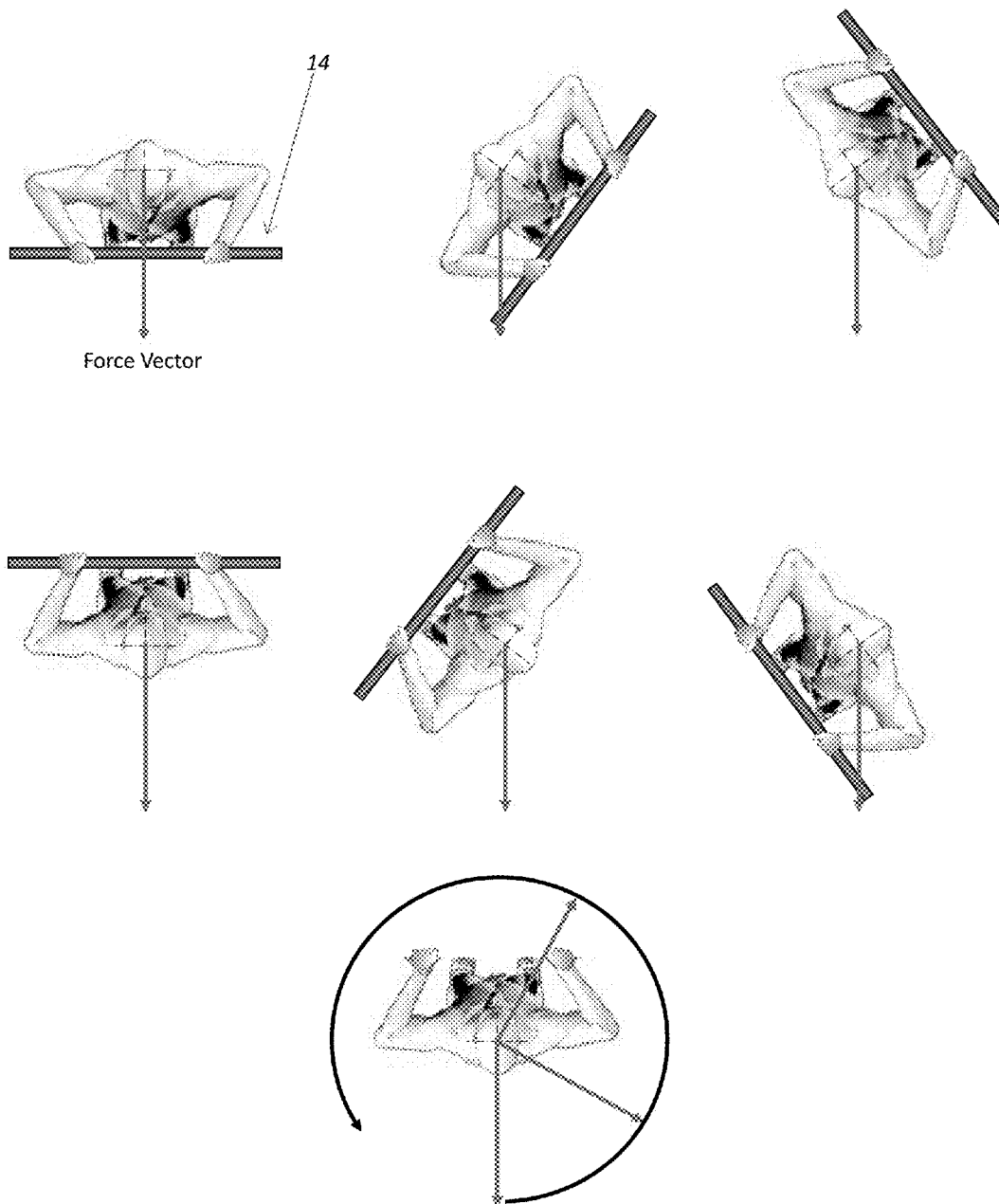


FIG. 1



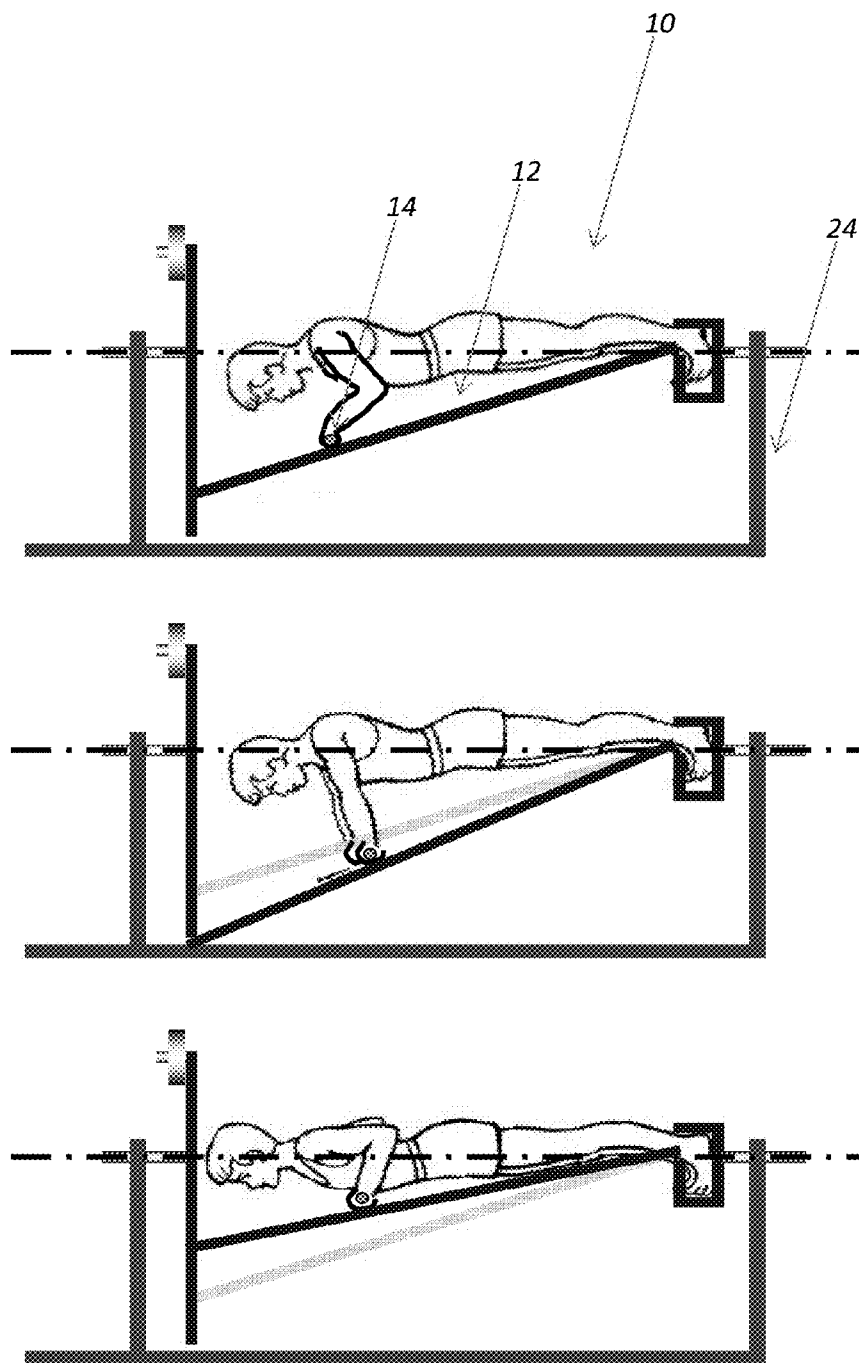


FIG. 3

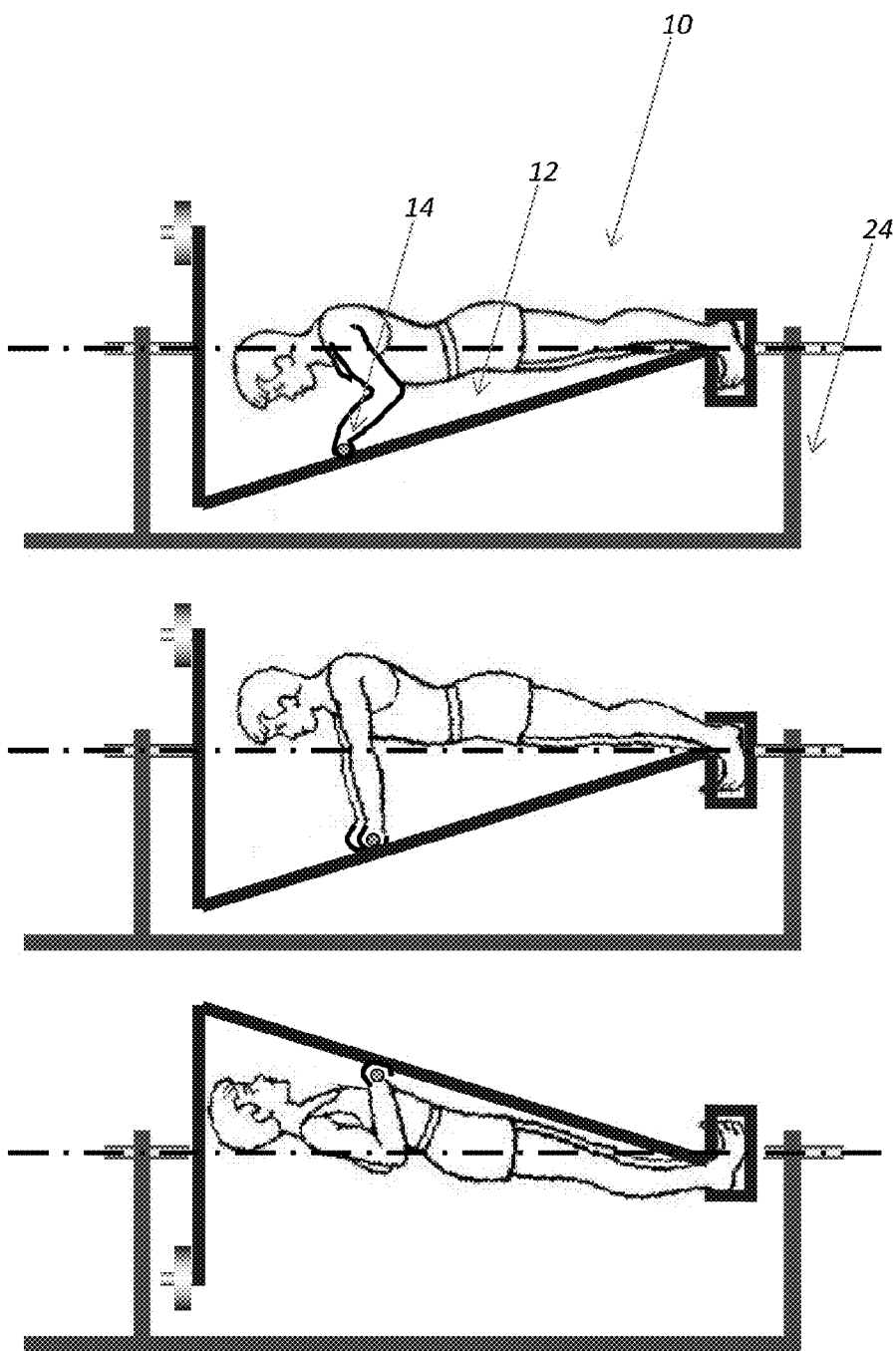


FIG. 4

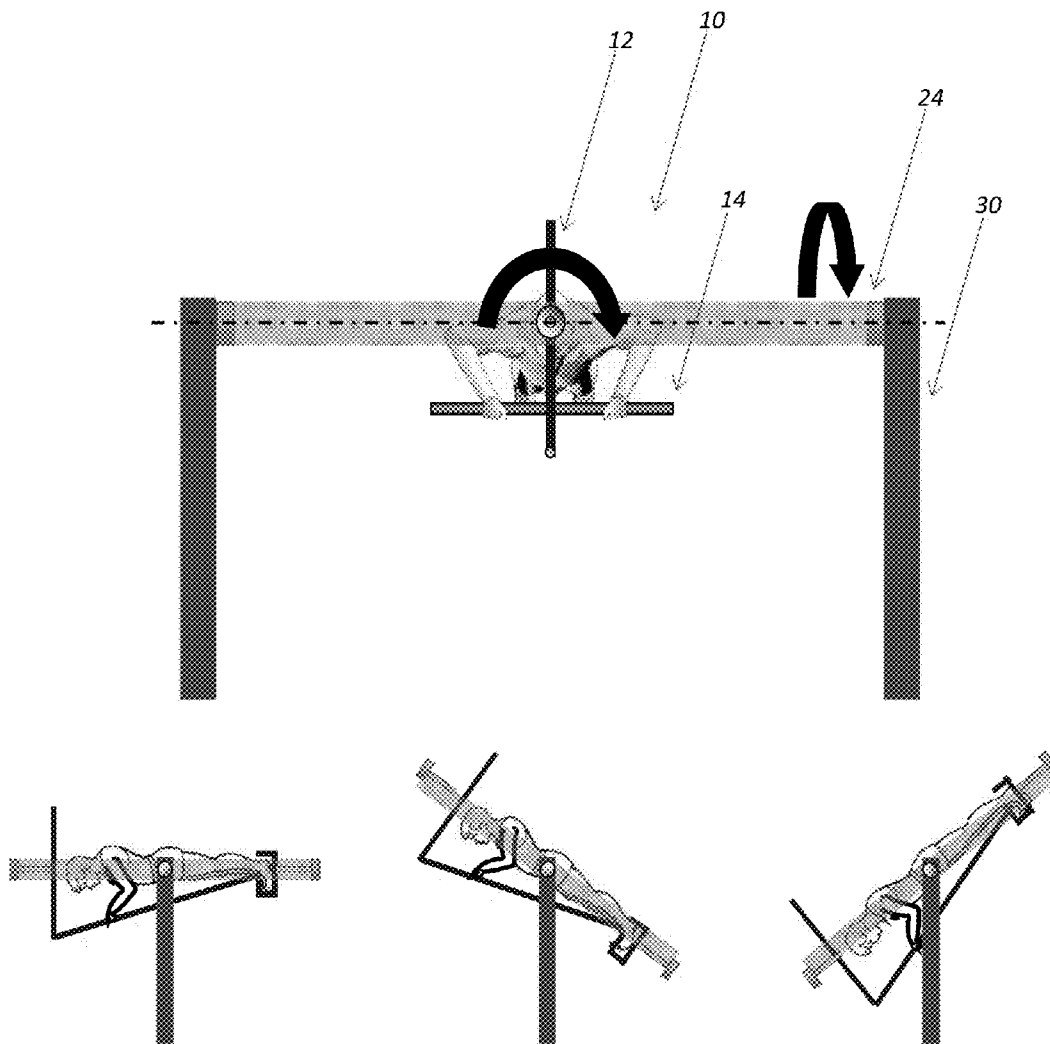


FIG. 5

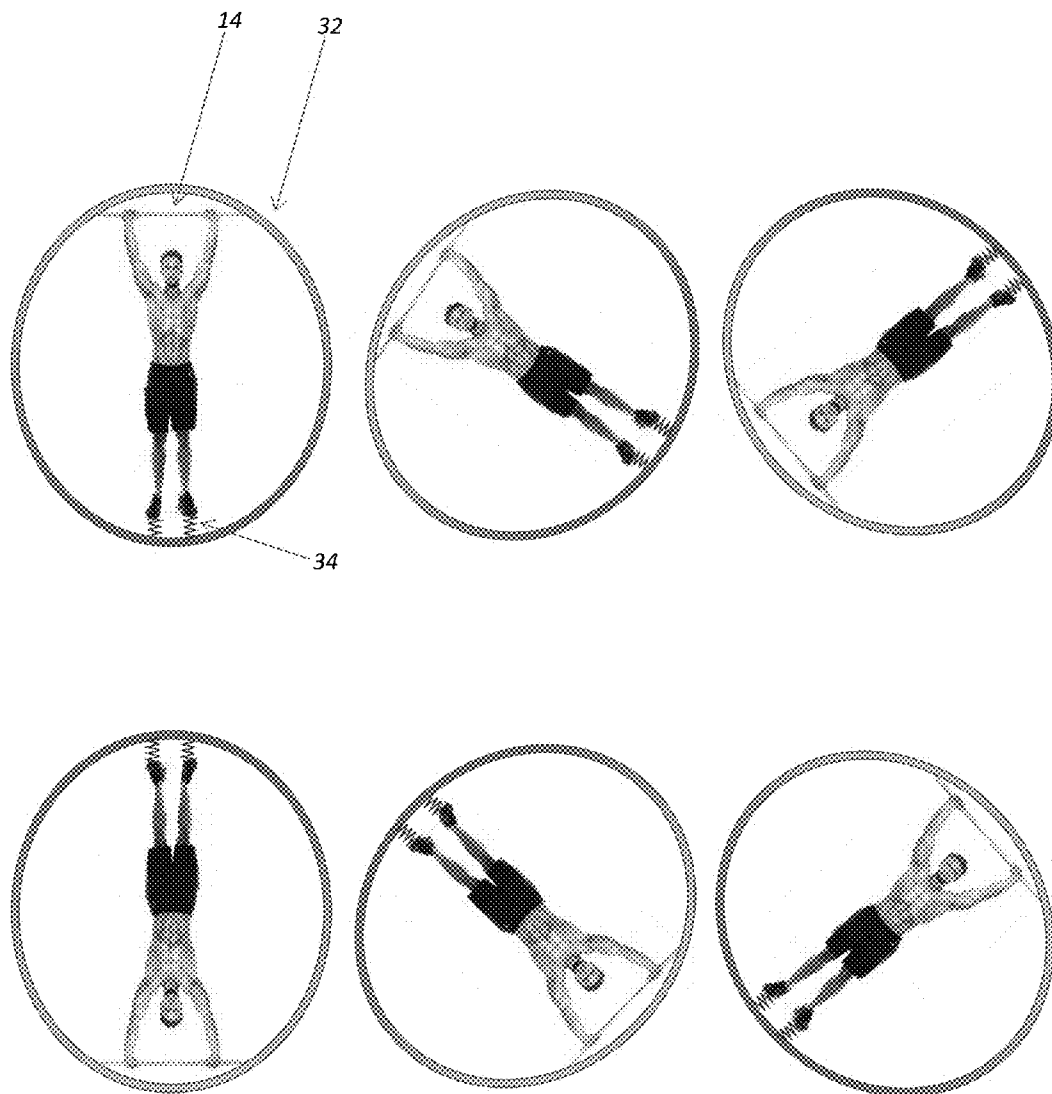


FIG. 6

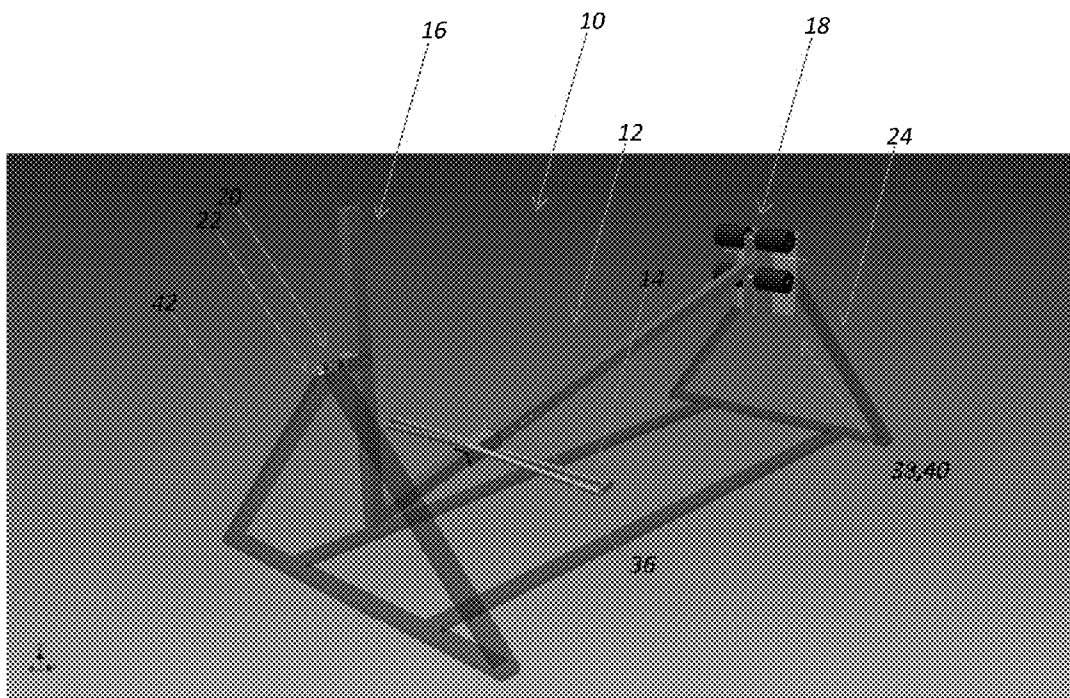


FIG. 7



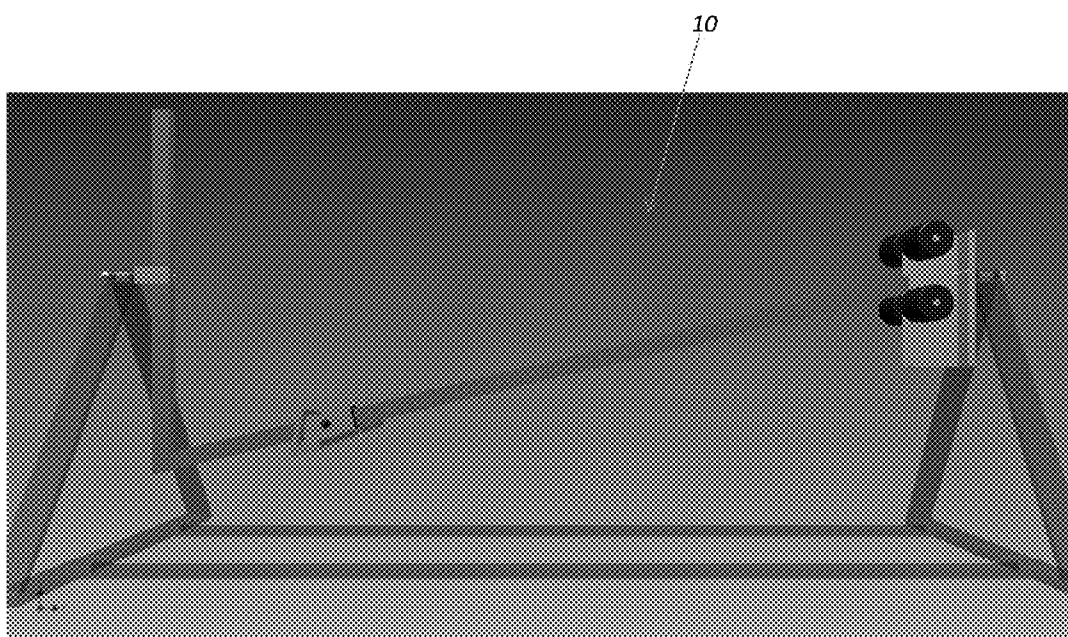


FIG. 8

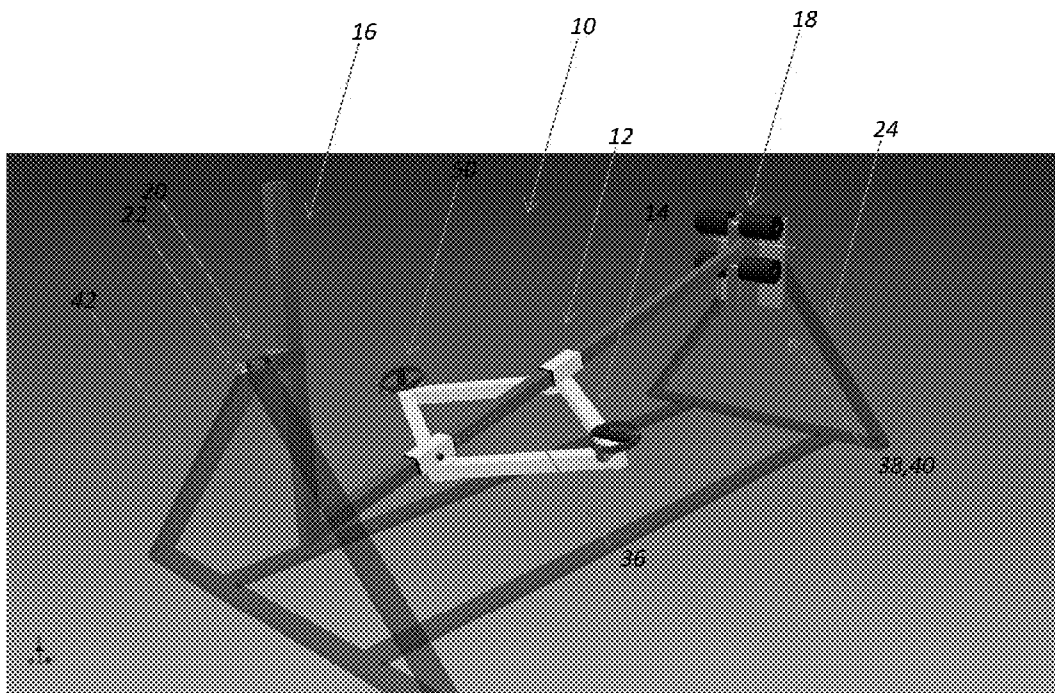


FIG. 9

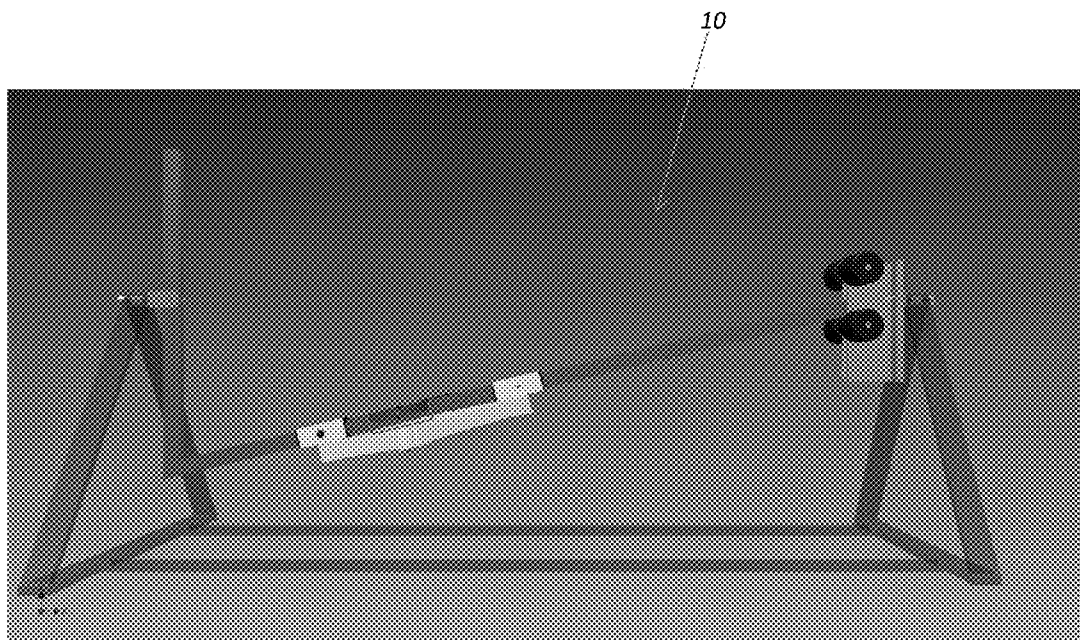


FIG. 10

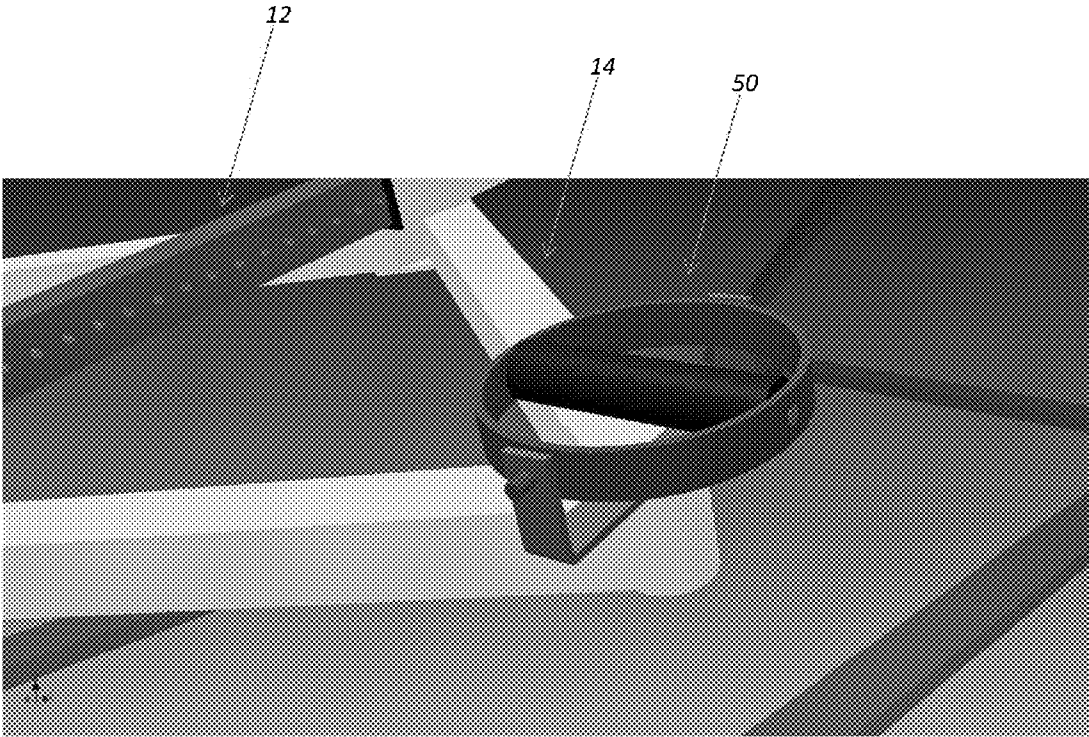


FIG. 11

**FULL-CORE FITNESS MACHINE AND METHOD**

**CROSS-REFERENCE TO RELATED APPLICATION**

[0001] The present patent application/patent claims the benefit of priority of co-pending U.S. Provisional Patent Application No. 62/114,655, filed on Feb. 11, 2015, and entitled “FULL-CORE FITNESS MACHINE,” the contents of which are incorporated in full by reference herein.

**FIELD OF THE INVENTION**

[0002] The present invention provides a novel fitness machine that is intended to promote the strengthening of multiple areas of the body at one time, providing a more holistic approach to strength conditioning and overall health. The principles of the present invention can be applied to not only general exercise, but to strength training for athletes, as well as therapeutic applications. The present invention promotes physiological balance, strengthening the body core from head to feet in 360 degrees around the body.

**BACKGROUND OF THE INVENTION**

[0003] Many forms of weight lifting and other physical training concentrate on specific muscle groups. If one is not careful to balance their training, this can lead to muscular imbalance. For example, doing push-ups regularly without balancing them with back exercises can lead to an imbalance in upper body strength between the chest and back, which can lead to postural problems and other issues. Similar problems exist with doing crunches and other exercises focused on the abdominal muscles without balancing them with lower back exercises.

[0004] Participants in regular exercise may tend to over-emphasize one area of the body, while neglecting other areas of the body, due to certain preferences, more recognizable results, and/or other factors. For example, the bench press, which is very popular, focuses on a limited set of muscles, while ignoring others, due simply to the “one degree of freedom” motion (i.e., up and down only) that works the triceps, deltoid, and pectoral muscles, but largely ignores the trapezius, rhomboid, and latissimus dorsi muscles, along with most of the muscles along the side of the abdomen, to name a few.

[0005] Thus, the present invention provides a methodology for ensuring 360 degrees of physical exercise and strengthening by providing a continuous and changing vector of resistance loading. Rather than having one degree of freedom (in the case of the bench press, for example), where the resistance force is always downward from the chest to the back, the present invention provides a force whose direction (vector) constantly changes in infinitesimally small angles to provide a second, and potentially a third, degree of freedom. The benefits of this functionality can range from better balance and posture to therapeutic benefits. For example, 360-degree strengthening of the neck area can help substantially with concussion related injuries, recovery, and prevention.

**BRIEF SUMMARY OF THE INVENTION**

[0006] Thus, the present invention provides a machine and method for working not only those muscle groups that are addressed by traditional weight lifting, but instead addresses

the full 360-degree core of the body in a continually varying motion, which results in a rotary force vector that works every muscle around the body.

[0007] In one exemplary embodiment, the present invention provides a fitness machine, including: a frame structure; a spanning bar rotatably coupled to the frame structure, wherein the spanning bar selectively rotates about a central axis; a gripping bar coupled to the spanning bar; and a retention mechanism coupled to the spanning bar; wherein, when a user grasps the gripping bar with his or her hands and puts his or her feet in the retention mechanism and the spanning bar is selectively rotated about the central axis, the user is also rotated about the central axis. Optionally, the spanning bar selectively rotates about the central axis by operation of an electric motor coupled to the spanning bar. Optionally, the spanning bar also selectively rotates about a secondary axis that is offset from the central axis. Optionally, the gripping bar is translatably along a length of the spanning bar. Optionally, the gripping bar is rotatable with respect to the spanning bar. Optionally, the fitness machine also includes a pair of rotatable hand grips coupled to the gripping bar by which the user selectively grasps the gripping bar. The spanning bar is disposed at an angle with respect to the frame structure such that a center of gravity of the user substantially coincides with the central axis when the user grasps the gripping bar with his or her hands and puts his or her feet in the retention mechanism.

[0008] In another exemplary embodiment, the present invention provides a fitness method, including: providing a frame structure; providing a spanning bar rotatably coupled to the frame structure, wherein the spanning bar selectively rotates about a central axis; providing a gripping bar coupled to the spanning bar; and providing a retention mechanism coupled to the spanning bar; wherein, when a user grasps the gripping bar with his or her hands and puts his or her feet in the retention mechanism and the spanning bar is selectively rotated about the central axis, the user is also rotated about the central axis. Optionally, the spanning bar selectively rotates about the central axis by operation of an electric motor coupled to the spanning bar. Optionally, the spanning bar also selectively rotates about a secondary axis that is offset from the central axis. Optionally, the gripping bar is translatably along a length of the spanning bar. Optionally, the gripping bar is rotatable with respect to the spanning bar. Optionally, the fitness method also includes providing a pair of rotatable hand grips coupled to the gripping bar by which the user selectively grasps the gripping bar. The spanning bar is disposed at an angle with respect to the frame structure such that a center of gravity of the user substantially coincides with the central axis when the user grasps the gripping bar with his or her hands and puts his or her feet in the retention mechanism.

**BRIEF DESCRIPTION OF THE DRAWINGS**

[0009] The present invention is illustrated and described herein with reference to the various drawings, in which like reference numbers are used to denote like machine components/method steps, as appropriate, and in which:

[0010] FIG. 1 is a series of schematic diagrams illustrating the operation of the motorized full-core fitness machine of the present invention, highlighting the rotation of a user from a push-up configuration to a pull-up configuration and back again;

[0011] FIG. 2 is a series of schematic diagrams illustrating the continuously varying force vector generated by the full-

core fitness machine of the present invention, again highlighting the rotation of the user from a push-up configuration to a pull-up configuration and back again;

[0012] FIG. 3 is another series of schematic diagrams illustrating the operation of the motorized full-core fitness machine of the present invention, highlighting the optional use of an adjustable spanning bar and a translatable and/or rotatable gripping bar;

[0013] FIG. 4 is a series of schematic diagrams illustrating the operation of the non-motorized full-core fitness machine of the present invention, highlighting the rotation of a user from a push-up configuration to a pull-up configuration and back again;

[0014] FIG. 5 is a series of schematic diagrams illustrating the operation of a multi-axis fitness machine of the present invention;

[0015] FIG. 6 is a series of schematic diagrams illustrating the operation of the fitness machine of the present invention utilizing an auxiliary frame structure and assistive supports, such as springs or tension members;

[0016] FIG. 7 is a perspective view illustrating one specific embodiment of the full-core fitness machine of the present invention;

[0017] FIG. 8 is another perspective view illustrating one specific embodiment of the full-core fitness machine of the present invention;

[0018] FIG. 9 is a perspective view illustrating another specific embodiment of the full-core fitness machine of the present invention;

[0019] FIG. 10 is another perspective view illustrating another specific embodiment of the full-core fitness machine of the present invention; and

[0020] FIG. 11 is a partial perspective view illustrating another specific embodiment of the full-core fitness machine of the present invention, highlighting the rotating hand grips thereof.

#### DETAILED DESCRIPTION OF THE INVENTION

[0021] Again, the present invention provides a machine and method for working not only those muscle groups that are addressed by traditional weight lifting, but instead addresses the full 360-degree core of the body in a continually varying motion, which results in a rotary force vector that works every muscle around the body.

[0022] Referring now specifically to FIG. 1, the full-core fitness machine 10 includes a spanning bar 12 with an attached gripping bar 14. The proximal end of the spanning bar 12 includes a vertical rotation bar 16, and the distal end of the spanning bar 12 includes a foot retention mechanism 18. A user places his or her feet securely in the foot retention mechanism 20 and grasps the gripping bar 14 with his or her hands, thereby placing the user in a push-up configuration, for example. A pair of rotation shafts 20 are coupled to the vertical rotation bar 16 and the foot retention mechanism 18 such that the spanning bar 12 and user can be rotated about a rotational axis 22 of the machine 10. In this exemplary embodiment, this rotational axis 22 is parallel, or nearly parallel, to the ground. The spanning bar 12 orients the user such that his or her general center of gravity is located about the rotational axis 22, or the overall center of gravity (including both that of the rotational components and the user) is located about the rotational axis 22. The pair of rotation shafts 20 couple the spanning bar 12 to a suitable frame structure 24. An electric motor 26 and optional counterweight 28 are coupled

to the vertical rotation bar 16 such that the spanning bar 12 and user can be rotated about the rotational axis 22 in a smooth, controlled manner. In this configuration, the electric motor 26 rotates the spanning bar 12 slowly about the rotational axis 22 while the user attempts to hold position with his or her body. Initially, the user may be in a typical push-up configuration, facing downward. In this position, the user will exercise the triceps, chest, stomach, back of neck, and so on. As the user is rotated to the side, he or she begins using the triceps on the lower arm and biceps on the upper arm, as well as shoulder, back, side neck, and side abdomen. When upside down, in a pull-up configuration, the user uses the back, back shoulder, lower back, buttocks, and front neck. This is illustrated in the various positions of FIG. 1, showing one complete revolution of the user. The use of the machine of the present invention enables the balanced development of multiple muscle groups without changing machines.

[0023] FIG. 2 is a series of schematic diagrams illustrating the continuously varying force vector generated by the full-core fitness machine 10 (FIG. 1) of the present invention, again highlighting the rotation of the user from a push-up configuration to a pull-up configuration and back again.

[0024] Referring now specifically to FIG. 3, in another exemplary embodiment, the spanning bar 12 may be adjustable (in vertical displacement and/or slope) to lower or raise the gripping bar 14, such that the "static" position of the user's arms changes, working the muscle group in a different range. Similarly, the gripping bar 14 can be rotated (when viewed from the top) to work yet another muscle group, and/or it can be shifted fore and aft to work yet another muscle group.

[0025] Referring now specifically to FIG. 4, in a further exemplary embodiment, the spanning bar 12 can be free-spinning (or slightly damped or otherwise controlled), rather than motorized, in such a way that when the user changes the position of his center of gravity from a neutral position, it instigates rotating movement. This movement provides more of a dynamic workout, while working the muscle groups through ranges of motion, rather than isometric (i.e., static) exercises. The user controls the rate of rotation by carefully controlling the position of his or her center of gravity. This element adds a degree of control necessary to operate the machine 10, such that it does not rotate too quickly. Specifically, FIG. 4 illustrates the user in a neutral position; instigating rotation with a raised center of gravity; and, once upside down, pulling himself or herself upward using the back muscles to again raise the center of gravity above the axis of rotation, thereby instigating or continuing rotational motion.

[0026] Referring now specifically to FIG. 5, in a still further exemplary embodiment, the frame structure 24 can be rotatably coupled to a suitable secondary frame structure 30 such that multiple rotating axes (providing multiple rotational orientations) may be imparted to the spanning bar 12 and user, thereby working more muscle groups in more directions.

[0027] Referring now specifically to FIG. 6, in a still further exemplary embodiment, an auxiliary frame structure 32 and assistive devices 34 can be added to aid the user in difficult orientations, or if the user is a novice. For example, springs are shown in FIG. 6 to help to support the weight of the user when upside down, thereby assisting in a vertical push-up or the like. Side supports and/or other assistive devices may be added as well.

[0028] Any of these configurations can be used in conjunction with weight belts to augment training in certain areas of

the body. For example, weights may be added about the waist to strengthen core muscles (i.e., abs, back, and sides about the abdomen). A weighted headband may be used to augment neck strengthening in 360 degrees, an exercise that may be used to significantly reduce the risk of concussions, for example.

**[0029]** The machine(s) of the present invention may be used not only for physical training and conditioning, but also for medical and physical therapy purposes. For example, concussions are known to be reduced through neck strengthening exercises. These devices can be used by athletes to reduce the likelihood of concussions. The use of assistive aids can help a patient gradually reach strength levels without the risk of dropping free weights, etc.

**[0030]** Referring now specifically to FIGS. 7 and 8, in more detail, the full-core fitness machine 10 includes a tubular-steel spanning bar 12 or the like with an attached tubular-steel gripping bar 14 or the like. The gripping bar 14 is translatable along a portion of the length of the spanning bar 12, and is locked into place by means of a locking peg and series of holes 36 or the like. The proximal end of the spanning bar 12 includes a tubular-steel vertical rotation bar 16 or the like, and the distal end of the spanning bar 12 includes a foot retention mechanism 18, such as a foot platform 38 and plurality of padded foot pegs 40 or the like. It will be readily apparent to those of ordinary skill in the art that other configurations can be used to perform the functions of these components equally. A user places his or her feet securely in the foot retention mechanism 20 and grasps the gripping bar 14 with his or her hands, thereby placing the user in a push-up configuration, for example. A pair of rotation shafts/bearings 20 or the like are coupled to the vertical rotation bar 16 and the foot retention mechanism 18 such that the spanning bar 12 and user can be rotated about a rotational axis 22 of the machine 10. In this exemplary embodiment, this rotational axis 22 is parallel, or nearly parallel, to the ground. The spanning bar 12 orients the user such that his or her general center of gravity is located about the rotational axis 22, or the overall center of gravity (including both that of the rotational components and the user) is located about the rotational axis 22. The pair of rotation shafts 20 couple the spanning bar 12 to a suitable frame structure 24. In this exemplary embodiment, the frame structure 24 includes any combination of frame members 42 that are suitable for stably supporting the various components and user. The electric motor 26 (FIG. 1) and optional counterweight 28 (FIG. 1) are coupled to the vertical rotation bar 16 such that the spanning bar 12 and user can be rotated about the rotational axis 22 in a smooth, controlled manner. In this configuration, the electric motor 26 rotates the spanning bar 12 slowly about the rotational axis 22 while the user attempts to hold position with his or her body. The electric motor 26 may be coupled to a gear 44 (FIG. 1) or the like associated with the spanning bar 12 and/or the proximal rotation shaft 20 via a pulley 46 (FIG. 1) or the like. Initially, the user may be in a typical push-up configuration, facing downward. In this position, the user will exercise the triceps, chest, stomach, back of neck, and so on. As the user is rotated to the side, he or she begins using the triceps on the lower arm and biceps on the upper arm, as well as shoulder, back, side neck, and side abdomen. When upside down, in a pull-up configuration, the user uses the back, back shoulder, lower back, buttocks, and front neck. Again, the use of the machine of the present invention enables the balanced development of multiple muscle groups without changing machines.

**[0031]** Referring now specifically to FIGS. 9-11, in more alternative detail, the full-core fitness machine 10 includes a tubular-steel spanning bar 12 or the like with an attached tubular-steel gripping bar 14 or the like. The gripping bar 14 is translatable along a portion of the length of the spanning bar 12, and is locked into place by means of a locking peg and series of holes 36 or the like. In this exemplary embodiment, the gripping bar 14 includes a plurality of members arranged in a diamond shape, to which rotating hand grips 50 are coupled. It will be readily apparent to those of ordinary skill in the art that other configurations can be used to perform the functions of these components equally. The proximal end of the spanning bar 12 includes a tubular-steel vertical rotation bar 16 or the like, and the distal end of the spanning bar 12 includes a foot retention mechanism 18, such as a foot platform 38 and plurality of padded foot pegs 40 or the like. It will be readily apparent to those of ordinary skill in the art that other configurations can be used to perform the functions of these components equally. A user places his or her feet securely in the foot retention mechanism 20 and grasps the gripping bar 14 with his or her hands, thereby placing the user in a push-up configuration, for example. A pair of rotation shafts/bearings 20 or the like are coupled to the vertical rotation bar 16 and the foot retention mechanism 18 such that the spanning bar 12 and user can be rotated about a rotational axis 22 of the machine 10. In this exemplary embodiment, this rotational axis 22 is parallel, or nearly parallel, to the ground. The spanning bar 12 orients the user such that his or her general center of gravity is located about the rotational axis 22, or the overall center of gravity (including both that of the rotational components and the user) is located about the rotational axis 22. The pair of rotation shafts 20 couple the spanning bar 12 to a suitable frame structure 24. In this exemplary embodiment, the frame structure 24 includes any combination of frame members 42 that are suitable for stably supporting the various components and user. The electric motor 26 (FIG. 1) and optional counterweight 28 (FIG. 1) are coupled to the vertical rotation bar 16 such that the spanning bar 12 and user can be rotated about the rotational axis 22 in a smooth, controlled manner. In this configuration, the electric motor 26 rotates the spanning bar 12 slowly about the rotational axis 22 while the user attempts to hold position with his or her body. The electric motor 26 may be coupled to a gear 44 (FIG. 1) or the like associated with the spanning bar 12 and/or the proximal rotation shaft 20 via a pulley 46 (FIG. 1) or the like. Initially, the user may be in a typical push-up configuration, facing downward. In this position, the user will exercise the triceps, chest, stomach, back of neck, and so on. As the user is rotated to the side, he or she begins using the triceps on the lower arm and biceps on the upper arm, as well as shoulder, back, side neck, and side abdomen. When upside down, in a pull-up configuration, the user uses the back, back shoulder, lower back, buttocks, and front neck. Again, the use of the machine of the present invention enables the balanced development of multiple muscle groups without changing machines.

**[0032]** Although the present invention is illustrated and described herein with reference to preferred embodiments and specific examples thereof, it will be readily apparent to those of ordinary skill in the art that other embodiments and examples may perform similar functions and/or achieve like results. All such equivalent embodiments and examples are within the spirit and scope of the present invention, are con-

templated thereby, and are intended to be covered by the following non-limiting claims.

What is claimed is:

1. A fitness machine, comprising:

a frame structure;

a spanning bar rotatably coupled to the frame structure, wherein the spanning bar selectively rotates about a central axis;

a gripping bar coupled to the spanning bar; and

a retention mechanism coupled to the spanning bar;

wherein, when a user grasps the gripping bar with his or her hands and puts his or her feet in the retention mechanism and the spanning bar is selectively rotated about the central axis, the user is also rotated about the central axis.

2. The fitness machine of claim 1, wherein the spanning bar selectively rotates about the central axis by operation of an electric motor coupled to the spanning bar.

3. The fitness machine of claim 1, wherein the spanning bar also selectively rotates about a secondary access that is offset from the central axis.

4. The fitness machine of claim 1, wherein the gripping bar is translatable along a length of the spanning bar.

5. The fitness machine of claim 1, wherein the gripping bar is rotatable with respect to the spanning bar.

6. The fitness machine of claim 1, further comprising a pair of rotatable hand grips coupled to the gripping bar by which the user selectively grasps the gripping bar.

7. The fitness machine of claim 1, wherein the spanning bar is disposed at an angle with respect to the frame structure such that a center of gravity of the user substantially coincides with the central axis when the user grasps the gripping bar with his or her hands and puts his or her feet in the retention mechanism.

8. A fitness method, comprising:

providing a frame structure;

providing a spanning bar rotatably coupled to the frame structure, wherein the spanning bar selectively rotates about a central axis;

providing a gripping bar coupled to the spanning bar; and providing a retention mechanism coupled to the spanning bar;

wherein, when a user grasps the gripping bar with his or her hands and puts his or her feet in the retention mechanism and the spanning bar is selectively rotated about the central axis, the user is also rotated about the central axis.

9. The fitness method of claim 8, wherein the spanning bar selectively rotates about the central axis by operation of an electric motor coupled to the spanning bar.

10. The fitness method of claim 8, wherein the spanning bar also selectively rotates about a secondary access that is offset from the central axis.

11. The fitness method of claim 8, wherein the gripping bar is translatable along a length of the spanning bar.

12. The fitness method of claim 8, wherein the gripping bar is rotatable with respect to the spanning bar.

13. The fitness method of claim 8, further comprising providing a pair of rotatable hand grips coupled to the gripping bar by which the user selectively grasps the gripping bar.

14. The fitness method of claim 8, wherein the spanning bar is disposed at an angle with respect to the frame structure such that a center of gravity of the user substantially coincides with the central axis when the user grasps the gripping bar with his or her hands and puts his or her feet in the retention mechanism.

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