MINI WAVE EXERCISE MACHINE

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ABSTRACT
An exerciser machine applicable for strengthening a user’s muscles via wave like movements is described. The exerciser can include a base assembly a resilience member and a seat pan. The seat pan may be rotatably attached to the base assembly via the resilience member. The seat pan may have a seat protrusion movably attached to a top end of the resilience member. The base assembly may have a base protrusion to secure a bottom end of the resilience member. A separation distance between the seat protrusion and the base protrusion along an axis of the resilience member can allow the resilience member to distort along the separation distance to provide resilience force with movement of the seat pan. The resilience force can allow exercising a user’s body via the movement of the seat pan.
MINI WAVE EXERCISE MACHINE

FIELD OF INVENTION

[0001] The present invention relates generally to physical training machines, and in particular, exercise machines structured for wave like movements to exercise a user's muscles.

BACKGROUND

[0002] With the growing awareness of health problems caused by lack of exercise, popularity of exercising machines has been continuously increasing. For example, waist twist machines are fitness devices commonly used for users to twist waist and abdominal muscles to achieve exercise effects. However, traditional fitness devices are either inconveniently bulky or constrained to allow simple rotational or linear movements. Thus, the conventional fitness devices require further improvements.

SUMMARY OF THE DESCRIPTION

[0003] An exerciser or exercise machine applicable for strengthening a user's muscles via wave like movements can include a base assembly a resilience member and a seat pan. The seat pan may be rotatably attached to the base assembly via the resilience member. The seat pan may have a seat protrusion movably attached to a top end of the resilience member. The base assembly may have a base protrusion to secure a bottom end of the resilience member. A separation distance between the seat protrusion and the base protrusion along an axis of the resilience member can allow the resilience member to distort along the separation distance to provide resilience force with movement of the seat pan. The resilience force can allow exercising a user's body via the movement of the seat pan.

[0004] Other advantages and features of the present invention will become manifest to those versed in the art upon making reference to the detailed description and the accompanying sheets of drawings in which a preferred structural embodiment incorporating the principles of the present invention is shown by way of illustrative example.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] The present invention is illustrated by way of examples and not limitations in the figures of the accompanying drawings, in which like references indicate similar elements and in which:

[0006] FIG. 1 is a perspective view of an exercise machine assembly according to one embodiment of the present invention;

[0007] FIGS. 2A-2B are cross sectional views of an exercise machine assembly according to one embodiment of the present invention;

[0008] FIG. 3 is an exploded view of an exercise machine assembly according to one embodiment of the present invention;

[0009] FIGS. 4A-4D show examples of applications for an exercising machine according to one embodiment of the present invention.

DETAILED DESCRIPTION

[0010] In the following description, numerous specific details are set forth, such as examples of external surfaces, named components, connections between components, etc., in order to provide a thorough understanding of the present invention. It will be apparent, however, to one skilled in the art that the present invention may be practiced without these specific details. In other instances, well known components or methods have not been described in detail but rather in a block diagram in order to avoid unnecessarily obscuring the present invention. Further specific numeric references such as first, second, third, etc., may be made. However, the specific numeric references should not be interpreted as a literal sequential order but rather interpreted as references to different objects. Thus, the specific details set forth are merely exemplary. The specific details may be varied from and still be contemplated to be within the spirit and scope of the present invention.

[0011] Reference in the specification to “one embodiment” or “an embodiment” means that a particular feature, structure, or characteristic described in connection with the embodiment can be included in at least one embodiment of the invention. The appearances of the phrase “in one embodiment” in various places in the specification do not necessarily all refer to the same embodiment.

[0012] FIG. 1 is a perspective view of an exercise machine assembly according to one embodiment of the present invention. Exercise machine (or device) 100 can include seat pan 101 tiltable or movably mounted to a base assembly including seat base 105. Seat pan 101 may be shaped concaved in a certain shape to receive a user's body at a sitting position. Handle bars 103 may be detachably coupled to seat base 105. In one embodiment, seat pan 101 may be tilted against seat base 105 along the edge to provide a user recoil force or resisting force back to untitled positions. The user may hold handle bars 103 in the course of waist, abdominal or pelvic rotation exercise while tilting seat base 101 in a wavy manner.

[0013] FIGS. 2A-2B are cross sectional views of an exercise machine assembly according to one embodiment of the present invention as shown in FIG. 1. Turning now to FIG. 2A, view 200A may include seat pan 101 rotatably attached to a base assembly via a flexible structure. The base assembly may include seat base 105 housing inner base 221 which provides chamber 225 inside the base assembly to allow movement of the flexible structure. A pair of handle bars 103 may be fixedly attached to the base assembly to allow a user to use the hands holds to cause movement of seat pan 101.

[0014] The base assembly may include base protrusion 219 to secure the bottom end of the flexible structure. For example, base protrusion 219 may comprise a post or tube secured to inner base 221 via screw 223. Inner base 221 may have recesses and protrusion structures, such as inner recess 229 and outer recess 231, formed at the bottom to house the flexible structure. For example, cylindrical spring 211 and conical spring 217 may be fittingly positioned inside inner base 221 at the bottom end of the flexible structure separately via inner recess 229 and outer recess 231.

[0015] The base assembly may include ring cover 215 secured on top of inner base 221. Mounting structures between seat pan 101 and seat base 105 may be covered with side cover 213 sitting on top of ring cover 215. Side cover 213 may be made of flexible material in a tube like forms to allow tilting or other movements of seat pan 101 relative to seat base 105.

[0016] The flexible structure may include one or more resilient members situated longitudinally between a top end and a bottom end to provide elastic forces when the flexible structure is deformed. For example, the flexible structure may
include cylindrical spring 211 positioned within conical spring 217. Cylindrical spring 211 may have opposite ends longitudinally between the top end and the bottom end of the flexible structure.

[0017] Various resilient forces may be provided by different resilient members in the flexible structure. For example, the flexible structure may be configured for cylindrical spring 211, which may be bendable longitudinally, to be bendable to provide bending force via movement of seat pan 101. Alternatively or additionally, conical spring 217 may be compressed to provide recoil force via movement of seat pan 101. Conical spring 217 may be shaped, for example, to increase stability with less vibration.

[0018] Seat pan 101 may be movably attached to the top end of the flexible structure via a seat protrusion. For example, seat pan 101 may be affixed with seat plate 207 at the bottom side of seat pan 101. Seat plate 207 may include protruded portion 227 which may form a circular tube. Flanged bushing 209 may have a sleeve inserted with (or encompassing) cylindrical spring 211 longitudinally and a flange extended for the top end of conical spring 217 perpendicular to the longitudinal direction. The seat protrusion may comprise protruded portion 227 and/or flanged bushing 209.

[0019] For example, seat pan 101 may be engaged with the flexible structure with protruded portion 227 inserted into the inner side of cylindrical spring 211. Thus, seat pan 101 may be engaged with the flexible structure with conical spring 207, flanged bushing 209, conical spring 217 and protruded portion 227 sandwiched and fittingly positioned between each other having a common longitudinal direction to allow the flexible structure to provide resilience force to support wavy (or wave like) movement of seat pan 101.

[0020] In one embodiment, seat protrusion may be configured with a longitudinal length suitable to allow the flexible structure to exert an amount of resistant force when deformed via movement of seat pan 101. The longitudinal length of seat protrusion may be based on, for example, the sleeve length of flanged bushing 209 and/or longitudinal length of protrusion portion 227 of seat plate 207. The flexible structure may provide resilience force to realign the seat protrusion and the base protrusion 219 when the seat protrusion and the base protrusion are not longitudinally aligned between the top end and the bottom end of the flexible structure.

[0021] For example, the seat protrusion, such as protrusion portion 227, may have a first longitudinal direction. Base protrusion 219 may have a second longitudinal direction. Movement of seat pan 101 may cause the first longitudinal direction to be not aligned with the second longitudinal direction to deform the flexible structure. The resilience force provided by the deformed flexible structure may allow a user to exercise the user’s body by moving (e.g. tilting, rotating etc.) seat pan 101. The seat protrusion and the base protrusion may be separated with a distance inside the flexible structure, e.g., cylindrical spring 211, to allow movements or changes of shape such as bending of cylindrical spring 211 and/or compressing/stretching of conical spring 217, to provide the resilience force.

[0022] Turning now to FIG. 2B, view 2003 illustrates a separate cross sectional view as view 200A of FIG. 2A along a different direction crossing the exercise machine (or exerciser), such as device 100 of FIG. 1.

[0023] FIG. 3 is an exploded view of an exercise machine assembly according to one embodiment of the present invention as shown in FIG. 1. Note that seat plate 207 may include protrusion portion 227 opposite to the side of seat plate 207 as shown in FIG. 3.

[0024] FIGS. 4A-4D show examples of applications for an exercising machine according to one embodiment of the present invention. Turning now to FIG. 4A, a user may hold on to handle bars of an exercise device, such as device 100 of FIG. 1, while making movements on seat pan in a sitting position. The user can slide seat pan back and forth between positions 401, 403 using waist muscles with the upper body of the user remaining stationary. As similarly shown in FIG. 4B, the user can slide seat pan left and right between positions 405, 407.

[0025] Turning now to FIG. 4C, the user can rotate or tilt the seat pan around in a wave like manner via waist movement. For example, the seat pan may be rotated in a counter clockwise direction following positions 409, 411, 415 and 415 repeatedly. Alternatively, as shown in FIG. 4D, the user can perform waist rotating movement in a clockwise direction following positions 417, 419, 421 and 423 repeatedly.

[0026] Many modifications and other embodiments of the invention set forth herein will come to mind to one skilled in the art to which the invention pertains having the benefit of the teachings presented in the foregoing description and the associated drawings. Therefore, it is to be understood that the invention is not to be limited to the specific embodiments disclosed and that modifications and other embodiments are intended to be included within the scope of the appended claims. Although specific terms are employed herein, they are used in a generic and descriptive sense only and not for purposes of limitation.

What is claimed is:

1. An exerciser comprising:
   a base assembly;
   a flexible structure; and
   a seat pan rotatably attached to the base assembly via the flexible structure,
   wherein the flexible structure has a top end and a bottom end,
   wherein the seat pan is movably attached to the top end of the flexible structure via a seat protrusion,
   wherein the base assembly is secured to the bottom end of the flexible structure via a base protrusion,
   wherein the flexible structure provides resilience force to realign the seat protrusion and the base protrusion when the seat protrusion and the base protrusion are not longitudinally aligned between the top end and the bottom end of the flexible structure with movement of the seat pan, wherein the resilience force to allow exercising a user’s body via the movement of the seat pan.

2. The exerciser of claim 1, wherein the seat protrusion has a first longitudinal direction, wherein the base protrusion has a second longitudinal direction, and wherein the movement of the seat pan causes the first longitudinal direction to be not aligned with the second longitudinal direction.

3. The exerciser of claim 1, wherein the flexible structure includes a cylindrical spring having opposite ends longitudinal between the top end and the bottom end of the flexible structure, and wherein the cylindrical spring is bendable to cause the resilience force.

4. The exerciser of claim 3, wherein the seat protrusion forms a circular tube inserted into a first one of the opposite ends of the cylindrical spring.
5. The exerciser of claim 4, wherein the base protrusion includes a post inserted into a second one of the opposite ends of the cylindrical spring and wherein the post and the circular tube are separated with a distance inside the cylindrical spring to allow the bending.

6. The exerciser of claim 3, wherein the flexible structure includes a conical spring encompassing the cylindrical spring between the top end and the bottom end of the flexible structure, wherein the conical spring is compressed to cause the resilience force when the seat protrusion and the base protrusion are not longitudinally aligned.

7. The exerciser of claim 3, wherein the seat pan is movably mounted on the flexible structure with a flanged bushing, and wherein the cylindrical spring is fittingly positioned between the flanged bushing and the seat protrusion.

8. The exerciser of claim 6, wherein the base assembly includes an inner base defining a housing chamber to allow distortion movement of the flexible structure for the resilience force.

9. The exerciser of claim 8, wherein the inner base has an inner recess, wherein the cylindrical spring is received in the housing at the bottom end of the flexible structure via the inner recess and wherein the cylindrical spring is fittingly positioned between the inner recess and the seat protrusion.

10. The exerciser of claim 8, wherein the inner base has an outer recess, wherein the conical spring is received in the housing at the bottom end of the flexible structure via the outer recess.

11. The exerciser of claim 1, further comprising:
   a pair of handles fixedly attached to the base assembly to allow the user to hold with the user's hands to cause the movement of the seat pan.

12. An exerciser comprising:
   a base assembly;
   a resilience member; and
   a seat pan rotatably attached to the base assembly via the resilience member,
   wherein the resilience member has a top end and a bottom end,
   wherein the seat pan has a seat protrusion movably attached to the top end of the resilience member,
   wherein the base assembly has a base protrusion to secure the bottom end of the resilience member,
   wherein a separation distance between the seat protrusion and the base protrusion along an axis of the resilience member allows the resilience member to distort along the separation distance to provide resilience force with movement of the seat pan, wherein the resilience force to allow exercising a user's body via the movement of the seat pan.

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