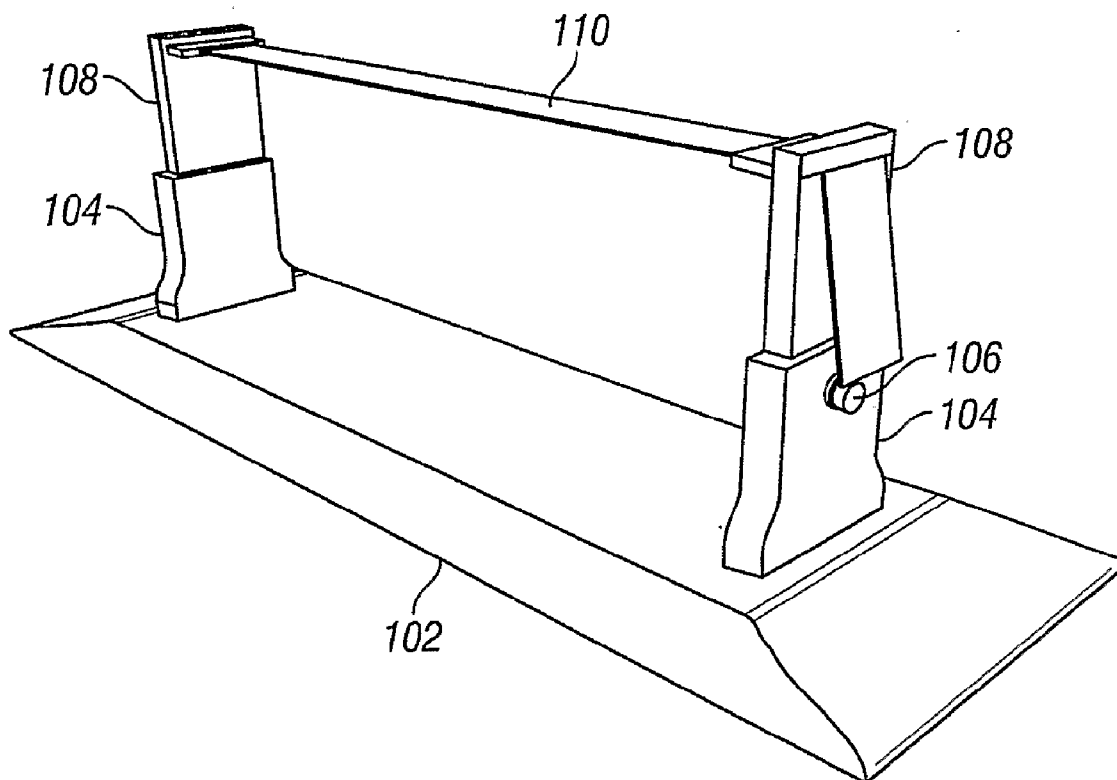




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(19) **United States**(12) **Patent Application Publication**
Evans et al.(10) **Pub. No.: US 2011/0130256 A1**(43) **Pub. Date: Jun. 2, 2011**(54) **EXERCISE APPARATUS****Publication Classification**(76) Inventors: **Graham Evans**, Carmarthen (GB);
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A63B 21/00 (2006.01)(52) **U.S. Cl.** **482/139**(57) **ABSTRACT**(21) Appl. No.: **12/674,917**(22) PCT Filed: **Jul. 20, 2008**(86) PCT No.: **PCT/GB08/02817**§ 371 (c)(1),
(2), (4) Date: **Feb. 24, 2010**

The present invention relates to an exercise apparatus that enables a number of exercises to be carried out utilising the apparatus. The present invention provides an aid to a user to perform an exercise using their own body weight. The apparatus comprises a biasing means arranged and configured to provide support for a user when in use, the biasing means including a sleeve and a piston arranged to move relative to the sleeve. The biasing means further includes a chamber provided between the sleeve and the piston wherein movement of the piston from a rest configuration to an extended configuration causes compression of the material in the chamber.

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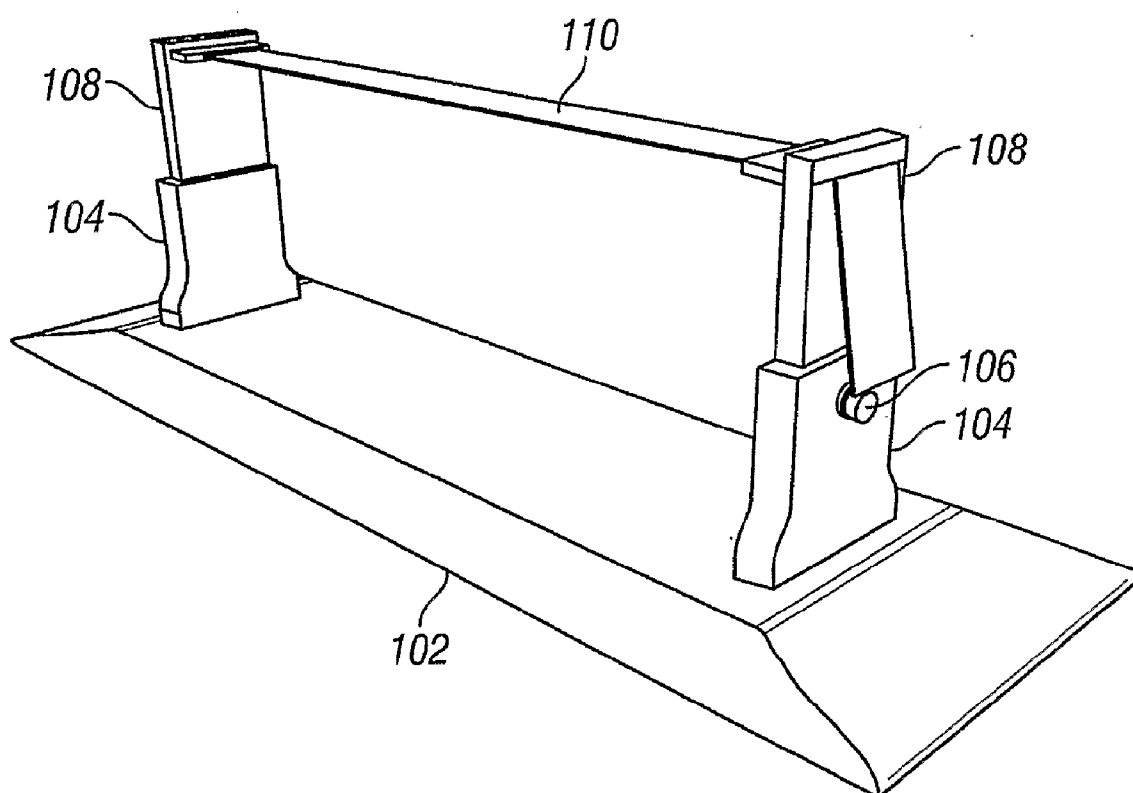


FIG. 1

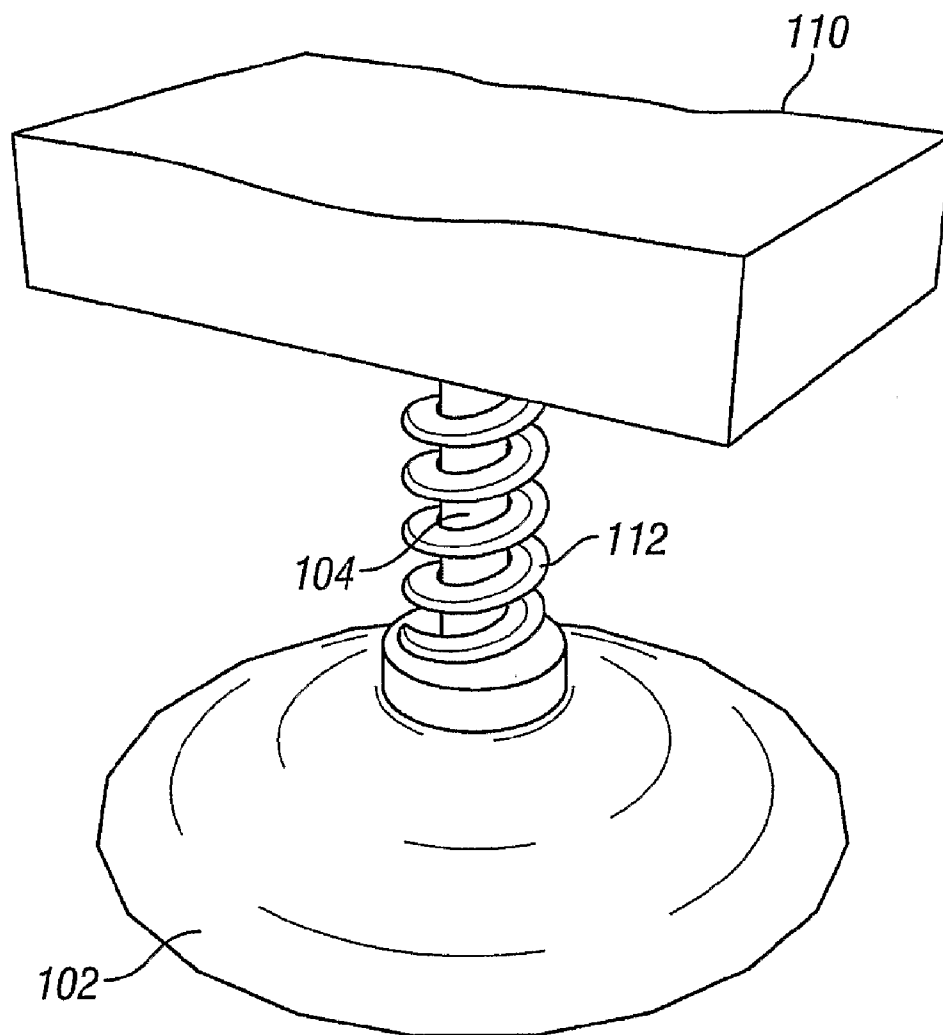


FIG. 2

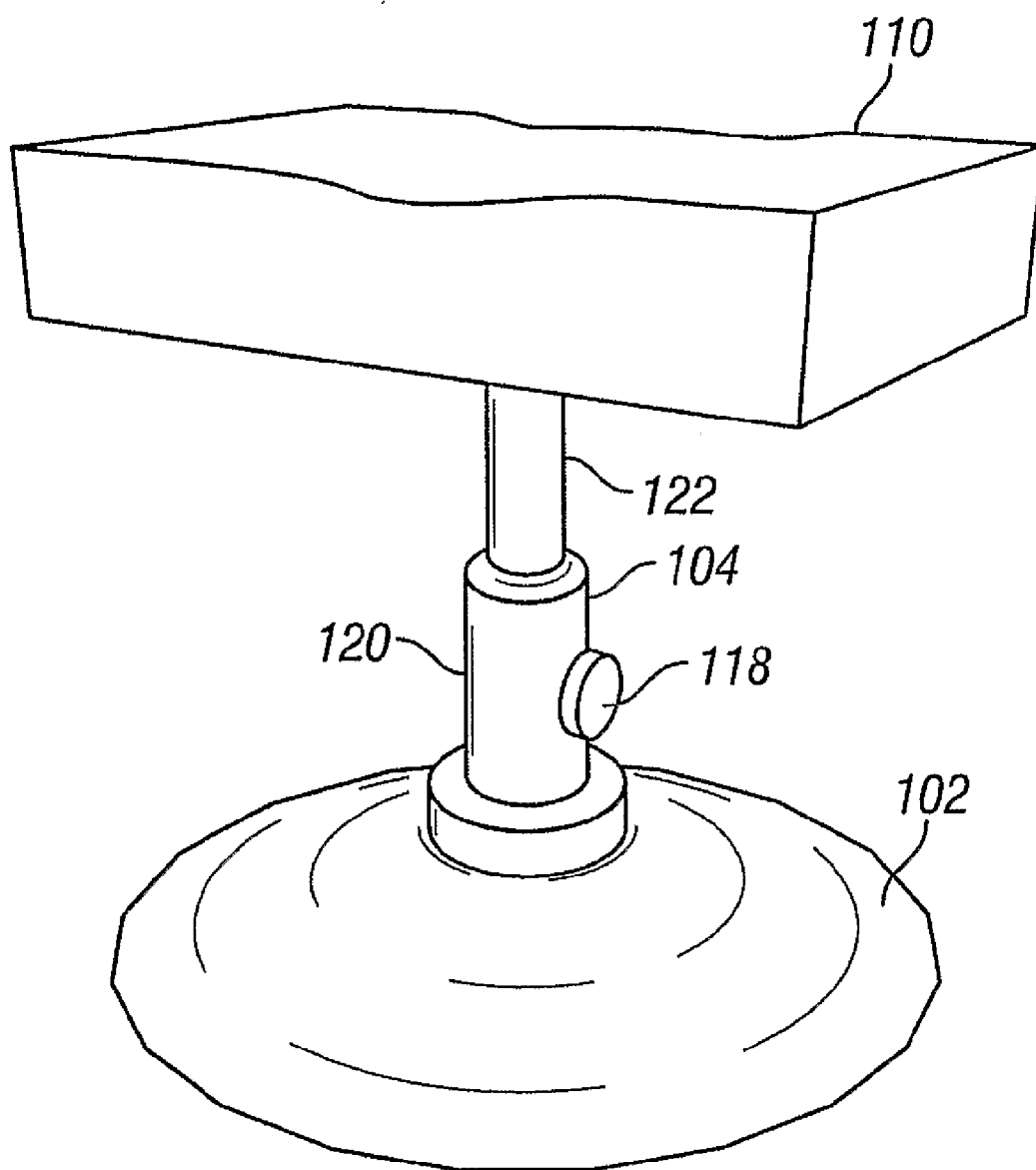
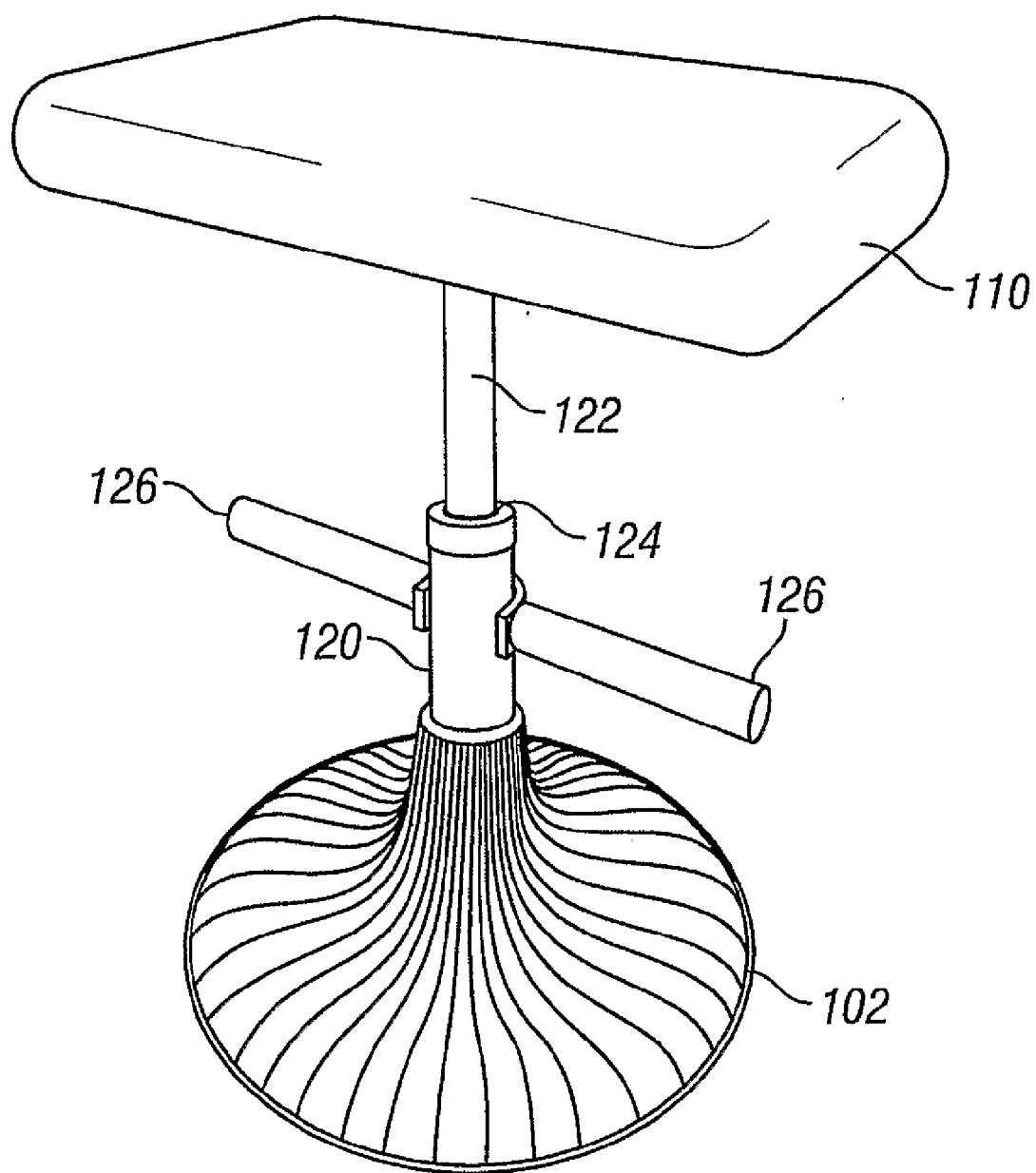
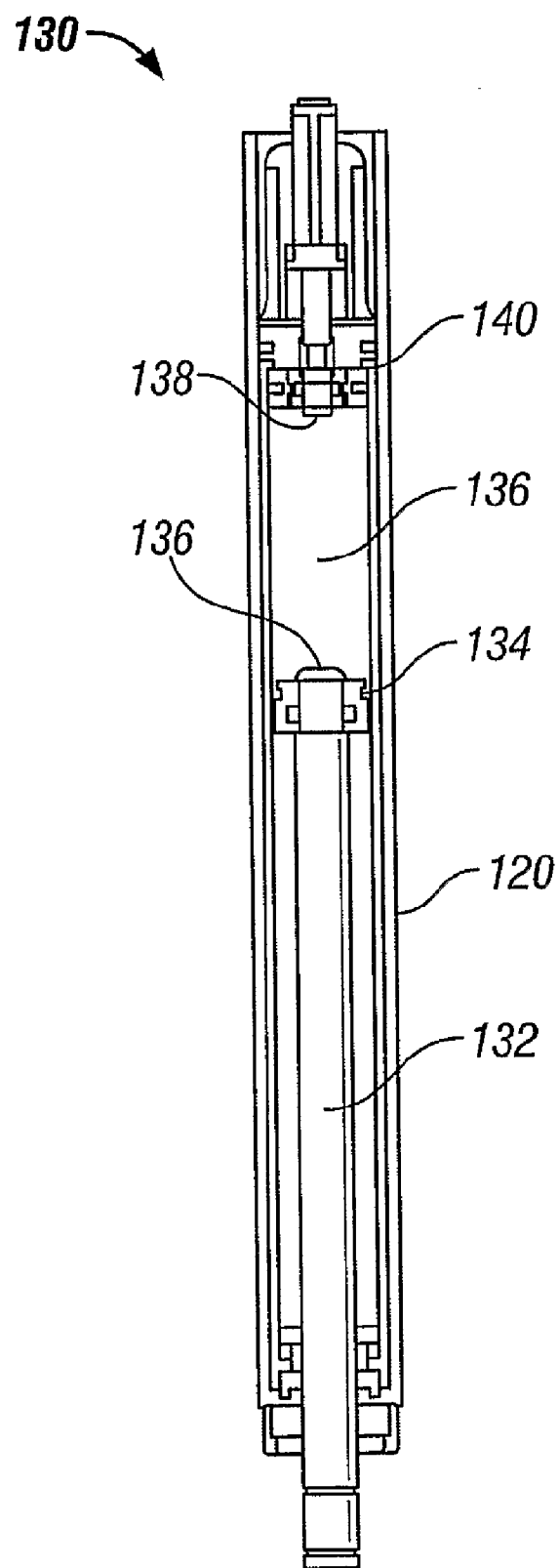


FIG. 3

**FIG. 4**

**FIG. 5**

EXERCISE APPARATUS

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to an exercise apparatus that enables a number of exercises to be carried out utilising the arrangement.

[0003] 2. State of the Art

[0004] With the recent trends in exercising many people seek to attend classes such as aerobics or alternatively become a member of a gym where they can attend and regularly exercise. However, these situations rely on an individual being able to attend either a set class or alternatively transport themselves to a gym which may be inconvenient for individuals as it causes them to modify their schedule accordingly. This often results in a situation wherein an individual misses out on their desired exercise routine. Additionally, most exercise apparatus involves a user pushing or pulling against a resistance, for example lifting a weight. However, it is becoming more widely appreciated that exercising in a manner in which exercise is conducted against the weight of the user more beneficial for the fitness and well being of the user.

SUMMARY OF THE INVENTION

[0005] The present invention overcomes some of the problems outlined above by providing an exercise apparatus that aids a user to perform an exercise using their own body weight.

[0006] According to a first aspect of the present invention there is an exercise apparatus for providing support for a user when the user is performing an exercise, the apparatus comprising a biasing means arranged and configured to provide support for a user when in use, the biasing means including a sleeve and a piston arranged to move relative to the sleeve, the biasing means further including a chamber provided between the sleeve and the piston wherein movement of the piston from a rest configuration to an extended configuration causes compression of the material in the chamber.

[0007] The material in the chamber may be a fluid or a gas.

[0008] The apparatus preferably further comprises means to adjust the restoring force of the biasing means between an extended configuration and a rest configuration.

[0009] The apparatus preferably further comprises a user contact member arranged to be supported by the biasing means.

[0010] The contact member is preferably supported by the piston.

[0011] The user contact member is preferably tiltable relative to the biasing means

[0012] The user contact member preferably includes an elastically deformable material.

[0013] The biasing means beneficially comprises a valve system arranged to control the movement of piston relative to the sleeve.

[0014] The apparatus further comprises a base onto which the biasing means is mounted.

[0015] A protrusion is preferably arranged to extend generally perpendicular to the biasing means. The protrusion preferably extends generally perpendicular to the sleeve, extending either side of the sleeve.

[0016] The user contact member is preferably arranged to support a user's midriff and/or a user's back, and/or a user's buttocks.

[0017] According to a second aspect of the present invention, there is an exercise apparatus for providing support for at least a part of the torso of a user when the user is performing an exercise, the apparatus comprising a biasing means arranged and configured to provide support for a user when in use, the biasing means being variable to provide an adjustable restoring force between an extended configuration and a rest configuration.

[0018] The exercise apparatus preferably further comprises means to adjust the restoring force of the biasing means between an extended configuration and a rest configuration.

[0019] The exercise apparatus beneficially comprises a support member arranged to extend from a base, the support member being arranged to co-operate with the biasing means.

[0020] The exercise apparatus preferably further comprises a user contact member arranged to be supported by the support member.

[0021] The user contact member is preferably arranged to extend between at least two support points.

[0022] The biasing means is preferably the user contact member in one embodiment of the present invention.

[0023] The user contact member is preferably tilt table relating to the support member. This enables support for a user's midriff or back dependant on the exercise to be programmed.

[0024] The user contact member may be an elastically deformable material.

[0025] The clamping means is preferably arranged to enable the user contact member to be selectively tensioned to a selectable degree. The clamping means may be averaged to tilt relative to the support member.

[0026] The biasing means is preferably interchangeable between a plurality of biasing means. The biasing means is beneficially a spring. The biasing means may further comprise locking means arranged to lock the biasing means at a selectable configuration in order to enable the restoring force to be adjusted.

BRIEF DESCRIPTION OF THE DRAWINGS

[0027] FIG. 1 is a perspective view of an exercise apparatus according to an exemplary embodiment of a second aspect of the present invention.

[0028] FIG. 2 is a perspective view of an exercise apparatus according to an exemplary embodiment of a second aspect of the present invention.

[0029] FIGS. 3 and 4 are perspective views of exemplary embodiments of a first aspect of the present invention.

[0030] FIG. 5 is a perspective view of an exemplary embodiment of a gas spring suitable for use in a first aspect of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0031] Referring to FIG. 1, an exemplary exercise apparatus. The arrangement comprises a base 102 having supports 104 extending generally perpendicular relative to the base 102. The supports may be height adjustable via a catch mechanism (not shown) whereby depressing a button 106 causes release of a member extending into the upper portion 108 of the support 104 such that the relative height of the upper support 108 to the lower part of the support 104 can be adjusted. This provides adjustability for different sizes and shapes of user. It will be appreciated that any type of mecha-

nism whereby the upper part of the support **104** or in particular the portion at which the user contact member **110** is connected to be height adjustable relative to the base **102**. The user contact member is clamped between the upper portion of the support **104**. In one embodiment of this aspect of the present invention, a plurality of user contact members are provided which may be releasably connected to the upper support **108**. The user contact members are made of an elastically deformable material such as elastic which provides some support to the midriff area of a user for performing exercises such as in particular press-ups. User contact members **110** having different elastic properties can be utilised as releasably connected to the upper supports **108** as necessary. It will be appreciated that user contact members having lower values of elasticity make the exercise easier as more support is provided for the user. This is particularly beneficial for a user who is potentially less fit, or alternatively is recovering from injury. Again, however, a user who is performing an exercise against their own mass rather than against weights or similar thereby improves a user's core stability rather than solely individual muscle groups.

[0032] Again referring to FIG. 1, the user contact member in a more preferred embodiment is fixed to one of the upper supports **108** and is drawn across to the opposing upper support **108**. A releasable clip mechanism is provided on the opposing support such that the user contact member can be extended to the tension as required. It is clear that increasing the tension in the user contact member **110** will reduce the subsequent elastic property of the user contact member and as such will provide more support to a user. Releasing the user contact member reduces the support provided to the user. The user contact member may extend from one of the supports **108** to the opposing support **108** to extend therethrough and may be clamped via a hinged clip which will clamp the user contact member between two surfaces thereby preventing movement. It will be appreciated that a variety of clamping means may be utilised however provided that the tension in the user contact member is adjustable then the object of the invention will be achieved. It is also envisaged that the user contact member could be used to support a user's back during a sit up exercise. For this reason, it is envisaged that the user contact member may be tilted to provide the desired angle for supporting a user when performing an exercise.

[0033] Referring to FIG. 2, a second embodiment of an exercise apparatus is provided comprising a user contact member **110** that may or may not be deformable but is arranged to be mounted on a support comprising means to enable the user contact member to move relative to the base **102**. The user contact member may comprise a rigid body having a soft covering thereon shaped and configured to receive the generally midriff area of the user to provide support. The support **104** enables the user contact member **110** to move relative to the base and may have a spring **112** or any alternative resilient biasing member which may be deformed when a force is applied to the upper surface of the user contact member **110**. If a spring is used as the biasing member, the spring **112** may be removable such that the restoring force against the weight of the user may be altered as required.

[0034] A further preferred embodiment of the present invention is shown in particular with reference to FIGS. 3 and 4. Referring to FIGS. 3 and 4, a support onto which the contact member **110** is mounted comprises a biasing means which can be generally referred to as a gas strut or a gas spring. A suitable arrangement is shown in more detail in FIG. 5 but

generally comprises a sleeve portion **120** and a piston portion **112** which locates within the sleeve portion **120**. It will be appreciated that with reference to FIGS. 3 and 4 the piston portion **122** is arranged to support the user contact member **110** however the arrangement could simply be reversed such that the sleeve **120** supports the user contact member **110** and the piston portion **122** is connected to the base **102**. Referring back to the drawings, the piston portion **122** is moveable with respect to the sleeve portion **120** and is moveable against a sealed gas compartment which provides resistance to movement of the piston relative to the sleeve. A sealing arrangement **124** ensures that no gas can escape from the sleeve **122** as the piston portion **122** is forced down into the sleeve **124**. It is important in the present invention that there is not an increasing resistance to downward movement as generally downward movement of the piston occurs as would happen with a simple spring arrangement. Accordingly, a valve system (see FIG. 5 for example) ensures that constant resistance through the movement of the piston within the sleeve is maintained. This is important for a user performing an exercise as will ensure that the user does not rely on the increased resistance provided by the biasing means to perform the exercise successfully. Accordingly, a user will be forced to contract their pelvic muscles, for example, in a press up position in order that the user can return to the starting position.

[0035] As shown in FIG. 4, protrusions **126** are arranged to extend from the sleeve **120** to enable further exercises to be carried out, for example to provide support for a user's feet for completing a sit up. The protrusions may be fixed to the sleeve **120** via any suitable means, and as can be seen in FIG. 4, the protrusions may comprise a single piece which clamps to the sleeve **120**.

[0036] Referring to FIG. 5, a suitable gas strut **130** is generally indicated comprising a sleeve **120** and piston **132**. The piston moves up and down within the sleeve **132** and the head is provided with a sealing arrangement **134** which prevents release of gas from the chamber **136** out of the system. The head of the piston comprises a protrusion **136** which is arranged such that it will come into contact with the corresponding stopper **138** located at the upper end of the sleeve which acts as a stopper to prevent further movement. When in use, as the piston is forced through the chamber **136** via the weight of the user, movement past the position in which the protrusion **136** contacts the stopper **138** is therefore prevented. An important feature of the present invention is that a valve system **140** is provided which controls the pressure within the chamber **136** such that a constant opposing force is applied against the movement of the piston. This is important as movement of the piston through the chamber **136** will be at a consistent speed (with a constant mass on the piston) and the valve system **140** enables the restoring force to remain substantially constant irrespective of the position of the piston **132** with respect to the sleeve **120**. As such, the resistance against movement of the piston **132** through the cylinder **120** will not increase as the protrusion **136** approaches the stopper **138**.

[0037] It is further appreciated that the pressure within the chamber **136** may be varied as provided for by alternative gas struts currently available. A control or dial may beneficially be provided as indicated in FIG. 3, with reference numeral **118**, which can be varied for different user weights, and/or depending on the pressure causes the exercise to be made more difficult as the pressure is lowered, to being easier as the pressure and thus the support increases.

[0038] Benefits of the apparatus is significant and enables a user to perform press ups under range of core body weight exercises by providing support in a generally weak pelvic area. The apparatus provides the necessary support to allow the user to get into the anatomically correct position. It also enables the user to slow down the exercise thus enabling the user to perform the right technique and forces the user to contract the pelvic muscles thus ensuring muscle strengthening and continued progress.

[0039] The present invention has been described by way of example only and it will be appreciated by a person skilled in the art that variations and modifications may be made to the present invention without departing from the scope of protection afforded by the amended claims. It will also be appreciated that aspects of the invention may be combined to form arrangements having features of both first and second aspects of the present invention. For example, the invention as defined with respect to the first aspect may be combined with one or more features of the invention as described in the second aspect to provide an exercise station.

1. An exercise apparatus for providing support for a user when the user is performing an exercise, the apparatus comprising a biasing means arranged and configured to provide support for a user when in use, the biasing means including a sleeve and a piston arranged to move relative to the sleeve, the biasing means further including a chamber provided between the sleeve and the piston wherein movement of the piston from a rest configuration to an extended configuration causes compression of the material in the chamber, and the biasing means further comprising a valve system arranged to enable release of material from the chamber such that the force opposing movement of the piston relative to the sleeve is enabled to remain substantially constant for a substantially constant applied load.

2. An exercise apparatus according to claim 1, further comprising means to adjust the restoring force of the biasing means between an extended configuration and a rest configuration.

3. An exercise apparatus according to claim 1, further comprising a user contact member arranged to be supported by the biasing means.

4. An exercise apparatus according to claim 3, wherein the user contact member is supported by the piston.

5. An exercise apparatus according to claim 3, wherein the user contact member is tiltable relative to the biasing means.

6. An exercise apparatus according to claim 5, wherein the user contact member includes an elastically deformable material.

7. An exercise apparatus according to claim 1, wherein the a valve system of the biasing means controls the movement of piston relative to the sleeve.

8. An exercise apparatus according to claim 1, further comprising a base onto which the biasing mean is mounted.

9. An exercise apparatus according to claim 1, further comprising a protrusion arranged to extend generally perpendicular to the biasing means.

10. An exercise apparatus according to claim 9, wherein the protrusion extends generally perpendicular to the sleeve, extending either side of the sleeve.

11. (canceled)

12. An exercise apparatus for providing support for at least a part of the torso of a user when the user is performing an exercise, the apparatus comprising a biasing means arranged and configured to provide support for a user when in use, the biasing means being variable to provide an adjustable restoring force between an extended configuration and a rest configuration.

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