CLAIMS

1. An exercise machine comprising:

   i) a seat;

   ii) resistance means;

   iii) an operating member constrained to move in a generally horizontal arc about a generally vertical axis against resistance provided by the resistance means and in a generally vertical arc about a generally horizontal axis against resistance provided by the resistance means; thereby to provide rotational reciprocal movement for both rotary torso and abdominal crunch exercises;

   wherein:

      a) the generally vertical axis passes through or near a rear edge zone of the seat;

      b) the generally horizontal axis is positioned forwardly of the generally vertical rotational axis; and

   iv) a frame and at least five exercise modules,

   wherein each module comprises:

      a) a carrier pivoted to the frame,

      b) bidirectional fluidic resistance means acting between the carrier and another carrier or the frame, and

      c) an operating member attached to the carrier; which operating member is appropriately shaped to be operated by a user by means of the muscle group to be exercised.

2. An exercise machine as claimed in claim 1 comprising a rotary torso module, an abdominal crunch module, a chest press/seated row module, a shoulder press/lat. pull module, and a leg extension and curl module.

3. An exercise machine as claimed in claim 1 or claim 2, wherein the operating members comprise a handlebar, handles or a leg-bar.

4. An exercise machine as claimed in claim 2 wherein:

i) the rotary torso module comprises a handlebar constrained to be movable in the generally horizontal arc about the generally vertical axis against the bidirectional fluidic resistance;

ii) in the abdominal crunch module the handlebar is arranged to be movable in the generally vertical arc about the generally horizontal axis against the bidirectional fluidic resistance;

iii) in the chest press/seated row module a pair of handles are each arranged to be movable in a generally vertical arc about a generally horizontal axis against the bidirectional fluidic resistance;

iv) in the shoulder press/lat. pull module a further handlebar is movable in a generally vertical plane against the bidirectional fluidic resistance;

and,

v) in the leg extension and curl module a leg-bar is rotatable in generally vertical arc about a generally horizontal axis against the bidirectional fluidic resistance.

5. An exercise machine as claimed in any preceding claim, wherein bidirectional fluidic resistance is provided by adjustable hydraulic or pneumatic struts comprising the resistance means.

6. An exercise machine as claimed in claim 5, wherein the adjustable hydraulic or pneumatic struts comprise opposed, independently adjustable, unidirectional struts.

7. An exercise machine as claimed in claim 6, wherein the adjustable hydraulic or pneumatic struts comprise pairs of opposed, independently adjustable, unidirectional struts.

8. An exercise machine as claimed in any preceding claim and provided with a computer-controlled display.

9. An exercise machine as claimed in claim 8 as dependent upon claim 5, 6 or 7, wherein the computer is programmed to display a range of exercise routines, the routines at least specifying exercise modules to be used and exercise routine appropriate settings for the struts.

10. An exercise machine as claimed in claim 8 or claim 9, wherein a user physiological characteristic sensor is linked to the computer-controlled display and the computer-controlled display is programmed to monitor the user physiological characteristic and modify a displayed exercise routine in accordance therewith.

Claims:

1. An exercise machine comprising:

a seat;

resistance means;

an operating member constrained to move in a generally horizontal arc about a generally vertical axis against resistance provided by the resistance means and in a generally vertical arc about a generally horizontal axis against resistance provided by the resistance means; thereby to provide rotational reciprocal movement for both rotary torso and abdominal crunch exercises;

the generally vertical axis passing through or near a rear edge zone of the seat;

characterised in that the generally horizontal axis is positioned forwardly of the generally vertical rotational axis.

2. An exercise machine as claimed in claim 1, wherein the resistance means provides frictional, elastic or fluidic resistance to motion.

3. An exercise machine as claimed in claim 2, wherein:

i) frictional resistance is provided by friction pads;

ii) elastic resistance is provided by elastomeric bands or coil springs; and/or

iii) fluidic resistance is provided by pneumatic or hydraulic struts.

4. An exercise machine as claimed in any of claims 1 to 3 and comprising further separate exercising modules arranged and configured to exercise other major muscle groups against bidirectional fluidic resistance.

5. An exercise machine as claimed in claim 4 in which all of the muscle group exercising modules are disposed to be operated by a user from a single position sitting on the seat.

6. An exercise machine as claimed in any of claims 1 to 5 and comprising:-

i) a rotary torso module wherein a handlebar is constrained to be movable in the generally horizontal arc about the generally vertical axis against bidirectional fluidic resistance;

ii) an abdominal crunch module wherein the handlebar is arranged to be movable in the generally vertical arc about the generally horizontal axis against bidirectional fluidic resistance;

iii) a chest press/seated row module wherein a pair of handles are each arranged to be movable in a generally vertical arc about a generally horizontal axis against bidirectional fluidic resistance;

iv) a shoulder press/lat. pull module wherein a further handlebar is movable in a generally vertical plane against bidirectional fluidic resistance;

and,

v) a leg extension and curl module wherein a leg-bar is rotatable in generally vertical arc about a generally horizontal axis against bidirectional fluidic resistance.

7. An exercise machine as claimed in any of claims 1 to 6 and comprising a frame and at least five exercise modules, each module comprising a carrier pivoted to the frame, bidirectional fluidic resistance means acting between the carrier and another carrier or the frame and an operating member attached to the carrier; each operating member being appropriately shaped to be operated by a user by means of the muscle group to be exercised.

8. An exercise machine as claimed in claim 7, wherein the operating members comprise a handlebar, handles or a leg-bar.

9. An exercise machine as claimed in any preceding claim, wherein bidirectional fluidic resistance is provided by adjustable hydraulic or pneumatic struts comprising the resistance means.

10. An exercise machine as claimed in claim 9, wherein the adjustable hydraulic or pneumatic struts comprise opposed, independently adjustable, unidirectional struts.

11. An exercise machine as claimed in any preceding claim and provided with a computer-controlled display.

12. An exercise machine as claimed in claim 11 as dependent upon claim 9 or 10, wherein the computer is programmed to display a range of exercise routines, the routines at least specifying exercise modules to be used and exercise routine appropriate settings for the struts.

13. An exercise machine as claimed in claim 11 or claim 12, wherein a user physiological characteristic sensor is linked to the computer-controlled display and the computer-controlled display is programmed to monitor the user physiological characteristic and modify a displayed exercise routine in accordance therewith.

AMENDED CLAIMS
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1. An exercise machine comprising:

a seat;

an operating member constrained to move in a generally horizontal arc about a generally vertical axis and in a generally vertical arc about a generally horizontal axis, thereby to provide rotational reciprocal movement for both rotary torso and abdominal crunch exercises;

the generally vertical axis passing through or near a rear edge zone of the seat and the generally horizontal axis being positioned forwardly of the generally vertical rotational axis;

characterised in that the exercise machine comprises:

i) a rotary torso module wherein a handlebar is constrained to be movable in the generally horizontal arc about the generally vertical axis against bidirectional fluidic resistance;

ii) an abdominal crunch module wherein the handlebar is arranged to be movable in the generally vertical arc about the generally horizontal axis against bidirectional fluidic resistance;

iii) a chest press/seated row module wherein a pair of handles are each arranged to be movable in a generally vertical arc about a generally horizontal axis against bidirectional fluidic resistance;

iv) a shoulder press/lat. pull module wherein a further handlebar is movable in a generally vertical plane against bidirectional fluidic resistance;

and,

v) a leg extension and curl module wherein a leg-bar is rotatable in a generally vertical arc about a generally horizontal axis against bidirectional fluidic resistance.

2. An exercise machine as claimed in claim 1, comprising resistance means which provides frictional, elastic or fluidic resistance to motion.

3. An exercise machine as claimed in claim 2, wherein:

i) frictional resistance is provided by friction pads;

ii) elastic resistance is provided by elastomeric bands or coil springs; and/or

iii) fluidic resistance is provided by pneumatic or hydraulic struts.

4. An exercise machine as claimed in any of claims 1 to 3 and comprising further separate exercising modules arranged and configured to exercise other major muscle groups against bidirectional fluidic resistance.

5. An exercise machine as claimed in claim 4 in which all of the muscle group exercising modules are disposed to be operated by a user from a single position sitting on the seat.

6. An exercise machine as claimed in any of claims 1 to 5 and comprising a frame and at least five exercise modules, each module comprising a carrier pivoted to the frame, bidirectional fluidic resistance means acting between the carrier and another carrier or the frame and an operating member attached to the carrier; each operating member being appropriately shaped to be operated by a user by means of the muscle group to be exercised.

7. An exercise machine as claimed in claim 6, wherein the operating members comprise a handlebar, handles or a leg-bar.

8. An exercise machine as claimed in any preceding claim, wherein the bidirectional fluidic resistance is provided by adjustable hydraulic or pneumatic struts comprising the resistance means.

9. An exercise machine as claimed in claim 8, wherein the adjustable hydraulic or pneumatic struts comprise opposed, independently adjustable, unidirectional struts.

10. An exercise machine as claimed in any preceding claim and provided with a computer-controlled display.

11. An exercise machine as claimed in claim 10 as dependent upon claim 8 or 9, wherein the computer is programmed to display a range of exercise routines, the routines at

least specifying exercise modules to be used and exercise routine appropriate settings for the struts.

12. An exercise machine as claimed in claim 10 or claim 11, wherein a user physiological characteristic sensor is linked to the computer-controlled display and the computer-controlled display is programmed to monitor the user physiological characteristic and modify a displayed exercise routine in accordance therewith.