(54) Title: WEIGHTED EXERCISING GARMENT

(57) Abstract

A weighted exercising garment (22) is formed in one piece of resilient flexible material so as to be a snug fit on the wearer's body. The garment comprises a central portion (40) around the wearer's torso, an upper portion (44) passing over the shoulders (24), and a lower portion (60) extending downwardly from the central portion and including portions that pass around the thighs (26). Packs of weights are attached to the upper portion at the front (70, 72) over the chest and over the upper back (74, 76), and further packs of weights are attached around the thighs (78, 80, 82, 84). The weights, in the form of packs (96) each having parallel pockets (97) with a respective plurality of individual weights (98), are removably attached by a curvy pile loop and hook material such as VELCRO (RTM). The garment (22) forms part of a kit (20) which includes two arm weight carriers (30) worn around the wrists and two leg weight carriers worn around the calves (34).
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WEIGHTED EXERCISING GARMENT

Background of the Invention

This invention relates to a weighted exercising garment, for use in exercising the human body as an aid to health and fitness. It is well established that weight training, or resistance training, advances the performance of the body's muscle system, strength and stamina. A multitude of weighted devices have been developed for this purpose. For example, United States Patents US-A-4 602 387 and 4 268 917 disclose loose-fitting vests with pockets that can be filled with weights, and United States Patent US-A-4 658 442 and United Kingdom Patent Application GB-A-2 129 281 show similar vests with weight-filled pockets which are made more snugly fitting by horizontal straps that can be tightened on the user.

United States Patent US-A-4 382 302 describes a similar sort of vest with horizontal straps which pass round the wearer's torso and can be tightened to hold the vest snugly in contact with the wearer's chest and back. A number of flat weights are attached as desired to the front and back panels of the vest by the use of curly pile loop and hook fastener material as sold under the registered trade mark VELCRO. Thus weights can be added or removed as desired for an individual's training schedule.

United States Patent US-A-4 384 369 reverts to a loose fitting exercise suit comprising a separate jacket and trousers (pants), with numerous pockets which carry bags of liquid to provide the desired weights. The pockets cover the torso, the arms from shoulder to wrist, and the legs from crutch to ankle. It is stated that instead of being formed as a two-piece suit, the suit may be constructed as a one-piece jump suit. With this suit the user can apparently carry up to of the order of 200lbs (90kg) weight, but this amount distributed in the unplanned manner described would not serve any useful exercising function, and would at the least be unbearably uncomfortable and could be positively dangerous.
To the present inventor's knowledge none of the above-mentioned exercise garments have actually been satisfactory for widespread use. Despite the plethora of pockets they do not provide a distribution of weights which strengthens the required muscles properly. Furthermore they are inconvenient to wear as, despite measures purporting to inhibit it, they still move around on the body and do not give the wearer the confidence that they are going to stay put during hard physical exercise. Finally, many of the garments are inelegant and out of keeping with modern sports environments.

**Summary of the Invention**

The present invention in its various aspects is defined in the appended independent claims, to which reference should now be made. Advantageous features of the invention are set forth in the sub-claims.

A preferred embodiment of the invention is described in more detail below with reference to the drawings. This embodiment takes the form of a one-piece garment of resilient flexible material which is a snug fit, when worn, on the user's body. The garment comprises a central portion around the wearer's torso, an upper portion passing over the shoulders, and a lower portion extending downwardly from the central portion and including portions that pass around the thighs. Packs of weights are attached to the upper portion at the front over the chest and also over the upper back, and further packs of weights are attached around the thighs. The weights are securely but removably attached by a curly pile loop and hook fastening material, such as that sold under the registered trade mark VELCRO.

The garment of this embodiment forms part of a kit which includes two arm weight carriers worn around the wrists and two leg weight carriers worn around the calves.

Preferably the packs of weights are usable on the garment or on the arm and leg weight carriers, and comprise a holder made of fabric, the holder having a plurality of parallel pockets each containing an individual weight. In this way the weights can conform to some extent to the shape of the body and are therefore
more comfortable to wear during exercise and are more securely
attached by the fastening material. Furthermore the weights can
be removed or interchanged so that the total weight and the weight
distribution can be varied as desired for the individual user.

It is of course very well-known to produce wet-suits and the
like which encase the user from shoulders to ankles but which are
formed of a resilient flexible material, such as to be a snug and
comfortable fit on the wearer's body and yet be quite sufficiently
secure for wear during active water sports such as sailing or
board-sailing. Materials akin to those used for such wet-suits can
be used to make an exercise garment in accordance with the present
invention.

**Brief Description of the Drawings**

The invention will now be described in more detail, by way
of example, with reference to the drawings, in which:-

**Figure 1** is a front view showing a first weighted
exercising kit embodying the invention being worn by a user;
**Figure 2** is a back view corresponding to Figure 1;
**Figure 3** is a front view of the clasp used at waist and
chest in the garment of Figure 1;
**Figure 4** is a rear view of the clasp when closed;
**Figure 5** is a rear view of the clasp when open and about to
be closed;
**Figure 6** is a front view of one of the weight packs used on
the garment;
**Figure 7** is a rear view of the weight pack of Figure 6;
**Figure 8** shows one of the weights;
**Figure 9** illustrates one of the arm weight carriers for
wear around the wrist;
**Figure 10** illustrates one of the leg weight carriers for
wear around the calf;
**Figure 11** is a front view showing a second weighted
exercising garment embodying the invention;
**Figure 12** is a back view corresponding to Figure 11;
**Figure 13** is a side view of the garment of Figure 11;
Figure 14 shows at (a) and (b) front and back views respectively of a portion of a kit including the garment of Figure 11 for use on the biceps of the arm;

Figure 15 shows at (a) and (b) similar views of the portion for use on the calves of the legs;

Figure 16 is a front view showing the kit being worn; and

Figure 17 is a back view corresponding to Figure 16.

Detailed Description of the Preferred Embodiments

The preferred embodiment of the invention is illustrated in Figures 1 to 10 of the drawings and reference is first made to Figures 1 and 2 which are respectively front and back views of the first weighted exercising kit being worn by a user.

The kit 20 comprises a main exercising garment 22 formed by a resilient flexible material and extending from the shoulders 24 to the thighs 26 of the user 28. In addition the kit includes two arm weight carriers 30 which are worn around the wrists 32 respectively, and two leg weight carriers 34 which are worn around the user's lower leg, more particularly around the calves 36.

The main garment itself is a one-piece suit and comprises a central portion 40 which is worn around the user's torso and is held at the waist by a clasp 42. Integral with this and extending upwardly from the central portion 40 is an upper portion 44 which passes over the user's shoulders 24 and provides a rear upper panel 46 and a front upper panel 48 in two parts 50,52 which are also held together by a clasp 54. Between the two clasps 42,54 at the front there is a cut-out region 56, and at the back there is a corresponding cut-out region 58. The front upper panel 48 thus is over the user's chest and the rear upper panel 46 is over the user's upper back.

Extending downwardly from the central portion 40 is a lower portion 60 integral with the central portion 40. This lower portion 60 includes two thigh portions 62 which extend as a tight fit around the user's thighs 26, to provide short-legged portions in the manner of a pair of shorts, terminating just above the knees. To lighten the material, and provide for ease of movement and for ventilation there is a cut-out region 64 over the crutch at the
front merging into a cut-out region 66 over the buttocks at the back.

Attached to various places on the garment are a number of pieces of curly pile loop and hook fastener material such as that sold under the registered trade mark VELCRO. The locations where such pieces of material are attached are as follows. Two pieces 70,72 are attached to the front upper panel 48, to left and right of the clasp 54 respectively. Two pieces 74,76 are attached to left and right respectively on the rear upper panel 46. Further pieces are attached around the thighs. As shown pieces 78,80 are attached to the inside of the left and right thighs respectively, and pieces 82,84 are attached to the outside of the left and right thighs respectively.

The two fasteners 42,54 are identical in construction and are illustrated in Figures 3 to 5. As seen in Figure 3, the closed clasp presents a plain face to the exterior. On the inside, however, there is access to a resilient flap 86 which, when depressed as shown by the arrow A, allows the clasp to be opened. As best seen in Figure 5, the right-hand side of the clasp comprises a tongue 88 carrying the flap 86 on its rear face. The left-hand side of the clasp comprises a box 90 which has a slot opening 92 to receive the tongue when moved into it in the direction of the arrow B and a cut-out 94 in its rear face to receive the flap 86, thus securing the tongue in the box. Any other suitable clasp could be used. If the cut-out 56 is not provided, then the fasteners 42,54 could be replaced by a zipper fastener, for example.

The weights are in the form of weight packs of which an example 96 is shown in Figures 6 and 7. The packs 96 are made from a fabric and stitched so as to provide four pockets 97 as shown in Figure 6. Purely for illustration one pocket is shown open with the weight 98 in position, though they will normally be sewn and sealed closed. The weights 98 are flat and elongate, generally rectangular with rounded ends as shown in Figure 8, and can be made of lead coated with a plastics material. By having a plurality of weights in each pack, for example from three to six individual weights (four in the example shown), the weights can conform to some extent to the human shape, and thus the fastener material holds them
on better, and having a degree of flexibility they move easier with
the body when exercise is performed. To this end the back of each
pack is formed by fastener material 100 which mates with the pieces
of material 70-84 on the garment. Typically two different types of
weight packs are made, one containing four 3oz or 75g weights and
the other containing four 5oz or 125g weights, or alternatively 6oz
or 150g weights.

The arm weight carriers 30 and leg weight carriers 34 are as
shown in Figures 9 and 10 respectively. Each basically consists of
an elongate strip 102 carrying a piece of fastening material 104 on
the outer surface at one end, and a corresponding piece of material
105 on the inner surface at the other end. At this other end, a
further piece of fastening material 106 may also be provided. The
fastening material 104 (and/or 106) also receives a weight pack 96.
An elastic section 108 is in the middle of the strip 102. The
strip 102 can be wound around the wrist or calf and fastened with
the fastening material. They then act as carriers to which the
weight packs can be attached using the fastener material 104. The
elasticated sections 108 allow them to fit all sizes and yet to be
secured tightly.

Thus the weight packs are altogether sited in five areas
around the body. They cover the upper body sections, namely the
front chest and upper back. Weights can thus be placed on the
front pectorals and the trapezius muscles of the upper back. This
enables the weights to be spread over the upper part of the body.
The arm weights are placed on each underside of the wrist and cover
the extensor muscles. The upper leg weights, on the thighs, are
located on each side of the quadriceps, both outside and inside, on
both legs. Finally, the lower leg weights are attached over the
calf muscle.

Twelve weight packs can thus be carried by the kit. If a
complete set of 3oz (75g) weights is used, this gives a total weight
of 9lbs (3.6kg). With 6oz (150g) weights, the total can be
doubled. The kit adds resistance to all forms of exercise. It is
suitable for use with many types of exercise because of its tight
fit, being formed of an elasticated fabric. The suit moves with
the body, and the weights are strategically placed to supply
resistance to the body in total, and not just to the areas that they are sited on. This is especially useful for floor exercises such as press-ups, sit-ups, and squat thrusts, for example.

Because the suit passes over the shoulders and also fits lightly around the thighs, while being a snug fit around the torso in between, it provides a secure framework to which the weights may be fixed. Unlike a vest, the suit does not risk riding up on the body and thus becoming uncomfortable and also feeling insecure, but rather is anchored firmly around the user's body.

The weights are located at positions where they not only exercise the proper muscles, but also so that they do not flap about as the user exercises. To this end the upper body weights are placed high on the body, quite near to the shoulders, both at front and back. The weights on the thighs are quite close to the knees, and are placed as shown in Figures 1 and 2 to either side of the knee. This is now preferred to the arrangement shown in the second embodiment, described below, where they are placed on the top of the knee. The lower leg weights are placed well up the calf; for best effect they should not be positioned down close to the ankle.

The kit can be used with all the weights in place, or with only some of them. For example, if used for remedial work, such as a knee injury or following orthopaedic surgery to the knee, the kit could be put on while just fixing leg weights, and the treatment carried out specifically to that area. As the injury improves, heavier weights can be added to strengthen and aid the improvement. Thus the kit can be used to be an aid either to the body as a whole or to specific muscle groups, either for exercise to develop fitness, or for remedial exercise to repair injuries.

In certain circumstances the suit 22 can be used on its own or with only the arm weights and not the leg weights, or vice versa. The suit 22 is relatively easy to put on with the clasps 42, 54 open, but is tightly secured as a snug fit on the user once they are fastened.

The fabric used to make the suit 22 can comprise a layer of rubber sandwiched between layers of polyester and nylon, and in any event the fabric will be strong but stretchable. In particular a preferred fabric can consist of 44% cotton, 42% nylon and 14% lycra.
While several types of stretch fabric could be used, material of the type used to make wetsuits can conveniently be used, for example, a smooth-skin Neoprene (Registered Trade Mark) type of material. The total thickness of fabric can be about 7mm.

The above preferred embodiment has the suit 22 formed in a single piece, though it may be manufactured from separate sections sewn or bonded together. Alternatively, the suit could be formed with separate jacket and shorts which are attached to each other about the waist, and this is the case in the second embodiment.

Referring to the second embodiment of Figures 11 and 12, it is seen that the upper body portion 110 covers the front of the chest, including the pectoral and trapezius muscles and is shaped like a vest and has attachment means at its lower end at 112. Each portion has central elasticated portions 114 and 115 in the front and rear, for comfort and access. The lower body portion 116 is preferably made from a number of pieces of material joined at the seams 118 and the upper part thereof opens at 120 as seen in Figure 13, so as to assist the wearer in getting into this portion. Attachment means are provided at 122, e.g. a piece of bonding fastener 122 for co-operation with the corresponding means 112 on the upper portion, or a tongue 113 passed through a slot or loop 123 and folded back and secured to itself, as shown in Figures 16 and 17.

The body portions 110 and 116 do not need to extend over the whole torso and can have a central gap, 126,127,128,129 as shown. Each portion is designed to be stretched around the respective part of the body so it fits tightly over the contours of the muscles of that part of the body.

The portions for the arm and leg, as shown in Figures 14, 15, 16 and 17, are each elasticated at 130 and do not require any fastening means. The portions of the kit for use on the other parts of the arm and leg will be shaped similarly to those shown in Figures 14 and 15, but of appropriate size, as seen in Figures 16 and 17.

In the areas indicated as 134 in respective areas of each portion of the kit, there are sewn on a series of elongated pockets made of fabric of adequate strength to hold lead weights; means are
provided at 136 to secure the pockets closed, e.g. bonding fasteners, buttons or hooks and eyes. The pockets and weights can be placed e.g. upright as drawn in Figure 16 or at an angle to the vertical or horizontal as in Figures 11 to 15, provided that the weights will be held in the pockets.

Additional elasticated portions could be provided in other areas of the kit if desired.

After the wearer has put on the kit, he can exercise in any desired manner, including carrying out a sport such as running, and the weights in the kit will put increased resistance on the respective groups of muscles. The kit may also be used by those who have undergone orthopaedic surgery and need remedial treatment. The number of weights used can be increased as exercise proceeds. Purely as an example, for an average adult male, suitable sizes of the weights are up to 2 kilograms or more for the upper body or for the lower body, and 1/2 kilogram each on the upper and lower arms (2 kilograms total on the arms) and 2 kilograms on each thigh and 1/2 kilogram on the lower legs; a total weight could be 4 kilograms. The garment or body kit can be provided in appropriate differing sizes, for persons of differing sizes, and for men and women.
CLAIMS

1. An exercising garment for carrying weights, formed of a resilient flexible material, and having a central section for wearing around the torso of a user, an upper portion integral with the central section and extending upwardly from the central portion for passing over the user's shoulders and having a front upper panel portion over the user's upper chest and a rear upper panel portion over the user's upper back, and a lower portion integral with the central section and extending downwardly from the central portion and including a thigh portion for wearing around the user's thighs, the garment being in use a snug fit on the wearer's body, and the front and rear upper panel portions and the thigh portion being provided with means for removably carrying weights.

2. A garment according to claim 1, in which the garment is constructed as a one-piece suit.

3. A garment according to claim 2, in which the garment includes releasable fastening means at waist and chest for ease of putting on and removing the suit.

4. A garment according to claim 1, in which the garment is constructed as a two-piece suit, and in which the central section comprises a jacket central portion forming with the upper portion a jacket, and a short-legged portion forming with the thigh portion a pair of shorts, the jacket and shorts being removably attached at their respective central portions.

5. A garment according to claim 1, in which the means for removably carrying weights comprises bonding fastener material which is self-fastening but readily releasable.

6. A garment according to claim 1, in which the means for removably carrying weights comprises curly pile loop and hook fastener material.
7. A garment according to claim 1, further comprising a plurality of weights to be carried by the garment, the weights being in the form of packs each comprising a fabric holder with a plurality of parallel pockets each for containing a respective weight.

8. A garment according to claim 7, in which the pockets are rectangular for receiving generally elongate weights.

9. A garment according to claim 1, in which the garment is formed of material comprising a layer of rubber between layers of polyester and nylon.

10. An exercising kit comprising an exercising garment formed of a resilient flexible material and extending from shoulders to thighs, two arm weight carriers for fitting around the wrists, and two leg weight carriers for fitting around the lower leg, the exercising garment comprising a central section for wearing around the torso of a user, an upper portion integral with the central section and extending upwardly from the central portion for passing over the user's shoulders and having a front upper panel portion over the user's upper chest and a rear upper panel portion over the user's upper back, and a lower portion integral with the central section and extending downwardly from the central portion and including a thigh portion for wearing around the user's thighs, the garment being in use a snug fit on the wearer's body, and the front and rear upper panel portions and the thigh portion being provided with means for removably carrying weights, and the arm and leg weight carriers each comprising means for removably fitting them around the wrist and lower leg respectively, and being provided with means for removably carrying weights.

11. An exercising kit according to claim 10, in which the arm and leg weight carriers are elongate with spaced sections of releasable fastening material thereon so that they can be fastened around the wrist or lower leg, and an elastic portion between the fastening sections.
12. An exercising kit according to claim 10, in which the weights carried by the arm and leg weight carriers are in the form of packs each comprising a holder of fabric material, the holder having a plurality of parallel pockets each for containing a respective weight.

13. An exercising garment for carrying weights, formed of a resilient flexible material to form a snug fit on the body of a wearer, and having areas of bonding fastener material which is self-fastening but readily releasable, and provided with a plurality of weights to be carried by the garment, the weights being in the form of packs each comprising a holder of fabric material, the holder having a plurality parallel pockets each for containing an individual weight.

14. An exercising kit comprising a garment of resilient flexible material extending from the shoulders of the wearer to the thighs, to be a snug fit around the body of the wearer, two separate arm weight carriers for fitting around the arms, and two separate leg weight carriers for fitting around the lower leg, and being provided with weights which can be detachably attached to the garment and to the arm and leg weight carriers to vary the total weight being worn.
### A. CLASSIFICATION OF SUBJECT MATTER

| IPC 5   | A63B21/065 |

According to International Patent Classification (IPC) or to both national classification and IPC.

### B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

| IPC 5   | A63B       |

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched.

### Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

### C. DOCUMENTS CONSIDERED TO BE RELEVANT

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**X** Patent family members are listed in annex.

Further documents are listed in the continuation of box C.

### Date of the actual completion of the international search

18 November 1993

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JONES, M
<table>
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<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<td>US,A,4 396 190 (WILKerson) 2 August 1983</td>
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