

EXERCISE UNIT

Cross Reference to Related Application(s)

The present application is a continuation-in-part of the copending application entitled "Exercise Unit," Serial No. 08/540,175, filed October 6, 1995 by David Richmond.

Field of the Invention

This invention relates to an exercise unit. More particularly, the invention relates to an improved exercise unit which includes a minimal number of parts and which is light in weight and compact and which is efficient in exercising the user's gluteus muscles.

Background of the Invention

Exercise units are now proliferating in view of the public's interest in providing sound and healthy bodies and in enhancing visual appearances. As exercise units proliferate, they are increasingly heavy and complex. They have also become increasingly expensive and immobile. Because of these factors, there is a tendency for the public to become increasingly wary of the claims made by the marketers of the exercise units concerning the benefits and advantages of such exercise units.

This invention provides an exercise unit which is light in weight and compact. It is also highly mobile so that it can be conveniently packed for transportation and storage. It includes a minimal number of parts and is inexpensive. It is primarily used to exercise the muscles in the lower part of the user's body and particularly the gluteus muscles. Even though it is light, compact, mobile and relatively simple in construction and operation, it still operates efficiently in exercising the user's muscles.

Summary of the Invention

In one embodiment of the invention a footrest made from a suitable material such as a polyolefin may have a tear drop configuration defined by a progressively increasing width or may have a cylindrical shape in cross section. An aperture is provided through the footrest and a hollow rod is extended through the aperture. A stretchable member made from a suitable material such as a latex extends through the hollow rod in a closed loop. The user disposes the stretchable member around his thighs and feet and then reclines on a floor with the user's back on the floor. The user then rests his feet on the floor against the footrest while reclining with his back on the floor. The user then exercises by alternately arching the user's back upwardly to

stretch the stretchable member and then collapsing the user's back against the floor-to release such stretching.

In a second embodiment, a belt in the form of a first closed loop is attached to the opposite ends of the stretchable member to define with the rod and the stretchable member a second closed loop larger than the first closed loop. The belt may envelop the user's waist. The stretchable member extends between the user's waist and the bottom of the user's feet. The user exercises by disposing both feet on the footrest and alternately rising to a substantially upright portion from a crouching position to stretch the stretchable member and then bending the user's knees to relieve any stretching of the stretchable member. In yet another embodiment, a user interface comprises an arcuate section with handlebars supported above the footrest by arms. In this embodiment the weight of the arcuate section may be adjusted by adding a material such as water or sand to the arcuate section's interior. Further weight adjustment may be provided by two handlebars that receive removable weights.

In a preferred embodiment the exercise device includes a footrest having a number of differently angled surfaces for placement of the user's feet while exercising. A pair of rotatable arms are attached to the footrest and a handle is positioned over the arms and is resistively attached to the device by an elastic cord which extends from the handle through the arms and the foot rest.

Brief Description of the Drawings

FIG. 1 is a schematical elevational view of an exercise unit constituting a first embodiment of the invention and shows the exercise unit between the user's feet and thighs with the user lying on the floor with his back on the floor;

FIG. 2 is a view similar to that shown in FIG. 1, but with the user's back arched upwardly from the floor to stretch a member in the exercise unit;

FIG. 3 is a schematic elevational view of an exercise unit constituting a first alternative embodiment and shows the exercise unit wrapped around the user's waist and extending to the position adjacent the user's feet with the user in a crouched position on the floor;

FIG. 4 is a view similar to that shown in FIG. 3, but with the user in a substantially upright position;

FIG. 5 is a perspective view of the exercise unit of FIGs. 1 and 2 in greater detail;

FIG. 6 is an enlarged fragmentary perspective view of a portion of the embodiment shown in FIG. 5;

FIG. 7 is a perspective view of a second alternative embodiment of the invention.

FIG. 8 is a perspective view of a third alternative embodiment of the invention;



FIG. 9 is a perspective view of a fourth and preferred embodiment of the invention;
FIG. 9a is a cross-sectional view of the footrest of FIG. 9 taken along line 9a-9a;
FIG. 9b is a cross-sectional view of the footrest of FIG. 9 taken along line 9b-9b;
FIG. 10 is an exploded view of the exercise unit of FIG. 9; and
FIG. 11 is a bottom view of the footrest of FIG. 9.

Detailed Description of the Invention

One embodiment of an exercise unit is shown in FIGs. 1 and 2 and is generally indicated at (10). The exercise unit includes a footrest (12) preferably having a substantially tear drop configuration in section. The footrest (12) may be made from a suitable material such as a polyolefin. The tear drop configuration provides the footrest (12) with an increasing thickness at progressive positions along the length of the footrest. At a position near the thick end of the footrest (12), an aperture (14) extends through the footrest. Although the footrest (12) is shown as preferably having a tear drop configuration in section, it will be appreciated that the footrest may have other configurations in section. For example, the footrest (12) may have an annular configuration in section.

A hollow rod (16) extends through the aperture (14) in the footrest (12). A member (18) made from a stretchable material such as a latex extends in a closed loop through the aperture (14). As shown in FIG. 1, the footrest (12) is disposed on the ground such that the thick end of the footrest is disposed away from the user. This causes the footrest (12) to be inclined and the ball and heel portions of the user's feet to be disposed on the footrest when the user is lying on a floor (20) with the user's back disposed on the floor.

The user then bends the user's legs and disposes the member (18) so that the member rests on the user's thighs and envelopes the user's feet. This is shown in FIG. 1. The user then arches the user's back upwardly as shown in FIG. 2 while maintaining the user's feet firmly planted on the footrest (12). This causes the member (18) to become stretched. As a result, the user has to exercise the user's leg muscles to stretch the member (18).

When the user has arched the user's back to the position schematically shown in FIG. 2, the user returns the user's back to the position against the floor (20) as shown in FIG. 1. This causes the constraint on the stretchable member (18) to become released. By moving the user's body alternately between the positions shown in FIGs. 1 and 2, the user is able to provide an efficient exercise of the user's back and leg muscles.

FIGs. 3 and 4 illustrate an exercise unit, generally at (30), constituting a first alternative embodiment of the invention. The embodiment (30) is similar to the embodiment (10) in the inclusion of the footrest (12) and the rod (16) extending through the aperture (14) in the footrest.



It is also substantially similar to the embodiment (10) in the disposition of a stretchable member (32) through the aperture (14) in the rod (16). However, the opposite ends of the stretchable member (32) are in turn attached to a member (38) forming a closed loop. The attachment of the stretchable member (32) to the member (38) is at the opposite ends of the closed loop. The member (38) may also be made from a stretchable material such as latex.

When the user desires to use the exercise unit (30), the user disposes the member (38) around the user's waist and stands on the floor (20) with the soles of the user's feet on the footrest (12). The user then alternates between a crouching portion as shown in FIG. 3 and a substantially upright portion as shown in FIG. 4. When the user raises the user's body to substantially the upright position, the user has to work against the confront of the stretchable member (32) by stretching the member. This constraint is relaxed when the user again returns to the crouching position. In this way, the user exercises the muscles of the user's legs. The degree of exercise can be controlled by adjusting the length of the invention of FIGs. 1 and 2. the stretchable member (32).

FIGs. 5 and 6 illustrate a more detailed version of the invention of FIGs. 1 and 2. This embodiment is generally indicated at (40). The embodiment (40) includes a footrest (42) with a tear drop or annular configuration in section and with an aperture (44) near the thick end of the footrest. A hollow rod (46) extends through the aperture (44). A strap (48) preferably made from a woven fabric material extends through the hollow rod (46).

The strap (48) is extended through tri-glides (50) at the opposite ends of the strap and then through rings (52) near the ends of the strap. The strap may then be folded back upon itself at its opposite ends and is again extended through the tri-glides (50). In this way, the length of the strap (48) between the rod (46) and each of the rings (50) may be adjusted by the user. The tri-glides (50) and the ring (52) are known in the art. The ring (52) may preferably have a D-shaped configuration.

A stretchable member (54) corresponding to the stretchable member (18) in FIGs. 1 and 2 is wrapped around the D-shaped portion of each of the rings (52). The stretchable member (54) may be provided with a hollow configuration and may be made from a suitable material such as a latex. The wrapped portion of the stretchable member (54) may be clamped to the rings (52) as by wire-tie generally indicated at (56). Each of the wire-ties (56) may include an open-ended loop (58) with the open ends of the loop extending through a clasp (60). A bellows (62) on the stretchable member (52) may be disposed within the wire-tie (56).

The exercise unit provides for an adjustable tension in the stretchable member (54) in FIGs. 5 and 6 (and in the member (18) in FIGs. 1 and 2 and in the member (32) in FIGs. 3 and



4) when the member is stretched. This results from the adjustments capable of being produced in the lengths of the strap (48) as by the inclusion of the tri-glides (50).

FIG. 7 is a schematic perspective view of a second alternative embodiment, generally indicated at (63), of the invention. In this embodiment, a handle (64) is disposed on the stretchable member (54) to enhance the comfort to the user. A footrest (66) with an annular configuration in section is included in the embodiment of FIG. 7 to show that the footrest may have other than a tear drop configuration in section. The embodiment shown in FIG. 7 is simplified relative to the embodiment shown in FIGs. 5 and 6 in that it eliminates the strap (48) and the tri-glide (50).

FIG. 8 illustrates a third alternative embodiment of the present invention. Lower body stationing means comprising a footrest (72) includes two arms (74) and (76), the footrest (72) and the arms (74) and (76) having an aperture for receiving a resistive structure (75) which, in the embodiment illustrated in FIG. 8, comprises surgical tubing although it will be appreciated that other materials as resistive structures are possible such as latex. The footrest (72) includes a dial (78) in which the resistive structure is attached and increases or decreases the slack of the surgical tubing and therefore allows a user to adjust the resistance provided by the surgical tubing.

The resistive structure (75) of the device shown in FIG. 8 further includes a user interface assembly (84) with an aperture for receiving the surgical tubing. The interface assembly (84) includes two flexible foam sheaths (80) and (82) coupled to an arcuate section (86) that interfaces with a user. The arcuate section (86) includes an internal reservoir for receiving a material such as water or sand through at least one of two handlebars (88) and (90), as will be described below, to provide an adjustable resistance to upward movement of the interface assembly (84).

At least one of the handlebars (88) or (90) includes a bore (92) for receiving a material such as water or sand, as previously described. Further resistance adjustment is provided by a plurality of removable weights (94), which may be attached to the handlebar by horizontally sliding a U-shaped channel (96) on to the handlebar (88) or (90). The weights (94) may then be rotated and locked into place. Removal of the weights (94) is the converse of the process just described.

The surgical tubing extends through the foam sheaths (80) and (82) and can either terminate and be rigidly secured to interface assembly (84) or can consist of a continuous loop passing through the interface assembly. To use the apparatus, the footrest (70) is disposed on the ground such that the inclined portion of the footrest is disposed away from the user. This causes the footrest to be inclined and the ball and heel portion of the user's feet can be placed on



the footrest when the user is lying with their back on the floor as shown in FIG. 1. The user grasps the two handlebars (88) and (90) and pulls the interface assembly (84) to be positioned across the hip or abdominal area of the user, thereby stretching the resistive structure (75). The user then arches their back upwardly as shown in FIG. 2 while maintaining their feet firmly planted on the footrest. This causes the resistive structure (75) to become further stretched. As a result the user has to exercise their leg and gluteus muscles to stretch the resistive member. The user then returns their back to the position against the floor thereby relaxing the additional tension in resistive structure (75). By moving the user's body between the position shown in FIGs. 1 and 2, the user is able to provide an efficient exercise of the user's leg and gluteus muscles.

FIGs. 9 and 10 illustrate a fourth alternative and most preferred embodiment of the invention. In this embodiment, the exercise device (100) includes a base portion or footrest (102) having curved arm portions (104) connected to the sides of the footrest by elbows (106). Elbows (106) are tubular L-shaped members having a lower leg (108) and an upper leg (110). Lower leg (108) extends into the footrest (102) through a circular opening (112) on the sides of the footrest. Upper leg (110) fits within tubular arm (104) on the lower portion of the arms. Elbows (106) allow arms (104) to rotate with respect to the footrest. End caps (116) are positioned in the upper end of tubular arms (104). Preferably arms (104) are made of a lightweight metal such as aluminum, however other materials such as plastic can also be utilized.

A handle (118) is positioned over arms (104) and is retained on the exercise device (100) by a resistance member (120). Resistance member (120) is an elongated stretchable material, such as surgical tubing or latex for example, or other suitable elastic material which continually extends from a T-shaped coupling (122) through both arms and the footrest and terminating in a second T-shaped coupling (122). Couplings (122) are removably connected to the handle (118) through apertures (124) and (126) in the handle. Once inserted through openings (124) and (126) the couplings are rotated 90° and positioned within a recess on the top surface of the handle. The handle (118) also includes two hand recesses (128) having finger bars (130) for rigidly grasping the handle.

As shown in FIG. 11, the bottom of the base is equipped with two tensioning posts (132) and three tensioning hooks (134), (136) and (138). Tensioning posts (132) and tensioning hooks (134), (136) and (138) provide eight different tensioning adjustments for the resistance member (120). The first tensioning position (120a) is achieved by placing resistance member (120) below tensioning posts (132). The second tensioning position (120b) is accomplished by placing the resistance member (120) above tensioning posts (132). Tensioning position (120c) is accomplished by placing resistance member (120) under tensioning post (132) and over



tensioning hook (134). Tensioning position (120d) is accomplished by placing resistance member (120) under tensioning posts (132) and over tensioning hook (136). Tensioning position (120e) is accomplished by placing resistance member (120) under tensioning post (132) and over tensioning hook (138). Tensioning position (120f) is accomplished by placing resistance member (120) over tensioning hook (134). Tensioning position (120g) is accomplished by placing resistance member (120) over tensioning hook (136) and tensioning position (120h) is accomplished by placing resistance member (120) over tensioning hook (138). Because resistance member (120) is an elastomeric material, the different tensioning positions provide different exercising resistances. As shown in FIGs. 10 and 11 the footrest includes viewing holes (140), (142) and (144) extending through the footrest which enables the user to see whether resistance member (120) is placed over tensioning hooks (134), (136) or (138).

As shown best in FIGs. 9a and 9b, the footrest (102) provides three different angled surfaces (146), (148) and (150) to provide five different feet positionings for working five different angles on the sets of muscle groups. In a first position the feet are placed on platform (148) to work the gluteus, some thigh and hip muscles. In a second position both feet are placed on platform (150), which has an angle greater than that of platform (148) to work the gluteus, top of the thighs and hip muscles. In a third position one foot is placed in the center of platform (150) while the second foot is held in the air above the exercise apparatus for advanced gluteus muscle exercise. In a fourth position both heels are placed on platform (146) to work the gluteus, lower medius, thigh and hip muscles. In the fifth position the user's toes are placed on platform (146) to work the gluteus, hamstring, thigh and hip muscles. Any or all of the platforms (146), (148) and (150) can include traction surfaces (152) to prevent the user's feet from sliding on the platforms during exercise. Preferably, the angle for platforms 146, 148, and 150 is approximately 22°, 9° and 17°, respectively, with respect to the ground surface.

To utilize the apparatus the user lies with their back on the floor and places their feet on the footrest in one of the five positions discussed above. The user grasps the handle (118) by grips (130) and places the curved portion (153) of the handle across their lower abdomen. The user then arches their back upwardly as shown in FIG. 2 while maintaining their feet firmly against the footrest. This causes resistance member (120) to be stretched and provides resistance along the handle. The user then returns their back to the position against the floor as shown in FIG. 1 thereby releasing the tension in the resistance member generated in arching their back. The exercise is continued by alternately moving between the positions shown in FIGs. 1 and 2 to provide an efficient exercise for the user's gluteus, thigh and hip muscles.

Another feature of the exercise device shown in FIGs. 9 and 10 is that the handle and arms rotate around the footrest to lie flat for easy storage. Additionally the connection of the

resistance member (120) to the handle by T-connectors (122) allows the handle to be removed from the exercise device and used as a weight bar. In this configuration the handle can be designed to have compartments (154) for adding handle weights. In addition a foam pad can be placed on the inside surface of the curved portion of the handle for additional comfort to the user.

The exercise unit disclosed above and shown in the drawings has additional important advantages. It is light in weight, simple in construction and portable. All of these advantages allow the user to carry the exercise unit in a suitcase with the user's clothes in a minimal amount of space when the user is traveling. In spite of its simple construction and light weight, the exercise unit provides for an efficient exercise of a number of different muscles in a user's body. Furthermore, the inclusion of the footrest provides comfort to the user when the user is exercising.

Although this invention has been disclosed and illustrated with reference to particular embodiments, the principles involved are susceptible for use in numerous other embodiments which will be apparent to persons skilled in the art. The invention is, therefore, to be limited only as indicated by the scope of the appended claims.

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WHAT IS CLAIMED IS:



1. An exercise device comprising:
a base having at least one substantially flat angled surface for placement of at least a portion of a user's feet;
a handle positioned away from the base; and
means for providing a resistance force against the increase in distance between the handle and the base.
2. The exercise device of claim 1 further comprising a pair of arms positioned between the base and the handle, the arms rotatably connected to the base.
3. The exercise device of claim 2 wherein the means for providing a resistance force between the handle and the base is an elastic cord releasably attached to the handle and extending through the arms and the base.
4. The exercise device of claim 3 wherein the base includes means for adjusting the resistance force of the elastic cord.
5. The exercise device of claim 4 wherein the means for adjusting the resistance force of the elastic cord includes at least one tensioning post extending from a lower surface of the base.
6. The exercise device of claim 4 wherein the means for adjusting the resistance force of the elastic cord includes at least one tensioning hook located on a lower surface of the base.
7. The exercise device of claim 1 wherein the handle includes a plurality of handle weight compartments.
8. The exercise device of claim 1 wherein there are three substantially flat angled surfaces each defining a different plane for exercising different muscle groups.

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9. An exercise device comprising:
a footrest having at least one platform for positioning at least a portion of a user's feet;
a pair of arms connected to the footrest; and
a handle movably positioned over the arms under a force.

10. The exercise device of claim 9 wherein there are three platforms each positioned at a different angle on the footrest.

11. The exercise device of claim 9 further comprising means for applying a force on the handle toward the arms.

12. The exercise device of claim 11 wherein the means for applying a force is an elastic cord removably connected to the handle and extending through the arms and the base.

13. The exercise device of claim 12 further comprising means for adjusting the resistance force of the elastic cord.

14. The exercise device of claim 13 wherein the means for adjusting the resistance force of the elastic cord includes at least one tensioning post extending from a lower surface of the footrest.

15. The exercise device of claim 13 wherein the means for adjusting the resistance force of the elastic cord includes at least one tensioning hook located on a lower surface of the footrest.

16. The exercise device of claim 9 wherein the handle includes a plurality of handle weight compartments.

17. An exercise device comprising a footrest having a plurality of separate angled surfaces for positioning at least a portion of a user's feet;
a pair of arms rotatably connected to the footrest; and
a handle movably connected to the arms by an elastic cord removably connected to said handle and extending through the arms and the footrest.

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18. The exercise device of claim 17 further comprising means for adjusting the tension in the elastic cord.

19. The exercise device of claim 18 wherein the means for adjusting the tension in the elastic cord comprises at least one tensioning post and a plurality of tensioning hooks located on a lower surface of the footrest.

20. The exercise device of claim 17 wherein the handle includes a plurality of handle weight compartments.

21. An exercise unit comprising:
a base for positioning at least a portion of a user's feet;
a handle having predefined finger grips positioned along the handle and a contoured user interface surface; and
means for providing a resistance force against the increase in distance between the handle and the base.

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