EXERCISE TRAINING APPARATUS

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Appl. No.: 11/568,444
PCT Filed: Apr. 29, 2004
PCT No.: PCT/US04/00566
§ 371 (c) (1), (2), (4) Date: Oct. 27, 2006

Foreign Application Priority Data
Apr. 29, 2003 (AU) .......................... 2003902010

Publication Classification
Int. Cl. A63B 69/34 (2006.01)
A63B 69/24 (2006.01)

The present invention relates to an exercise training apparatus and more specifically to a martial arts/boxing training apparatus which overcomes the problems associated with existing devices in that it provides the user with the ability to hone in on skills such as speed, power, accuracy and blocking, and also simulate the unpredictable nature of a real-life sparring partner. The apparatus includes a base plate for mounting the apparatus to a surface, a support member, and one or more padded balls that are adapted to move about the support member through connecting arms whose height is adjustable. In one form of the invention, the arms are rigid structures which rotate in a horizontal plane about the support member whereby the length of each arm is adjustable. This embodiment is especially useful when a user wishes to hone in on a particular skill which does not require the element of surprise. In a further form of the invention, the support member includes a flexible arm mounted thereto which is not only capable of rotational movement in a single plane, but is also capable of tiltable and pivotable motion relative to the support member which adds a further dimension to the training apparatus. This embodiment is especially useful when the unpredictable nature of a real-life sparring partner is required.
EXERCISE TRAINING APPARATUS

[0001] The present invention relates to an exercise training apparatus and in particular, to an apparatus for use in the development of skills such as speed, accuracy and blocking in various full-contact sports such as boxing and martial arts.

BACKGROUND OF THE INVENTION

[0002] Boxing, martial arts and other full-contact sports are possibly the most gruelling of any other physical exercise in that they require the sportsman participating to be at peak physical fitness. For example, in the sport of boxing, speed is required so that a fighter can punch an opponent or dodge an opponent’s punch as swiftly as possible; power is required so that maximum force can be used when punching; accuracy is required so that when a punch is thrown the boxer has a greater chance of hitting a target; and obviously the skill of blocking is required to avoid being hit in areas such as the face and abdomen.

[0003] All of the abovementioned skills require dedicated training and hard work on behalf of the sportsman. These skills have been acquired more easily in recent years through use of training devices. Devices that incorporate contact between a user (usually the fist, foot, knee or elbow) and the striking surface of the device itself have not only removed the need for a physical sparring partner but have also provided the user with a means to hone in on the skill which requires particular attention. Equipment commonplace in most gyms today includes suspended boxing bags, freestanding upright bags, suspended boxing balls (commonly known as speed balls), and double-ended punching balls.

[0004] Boxing bags are heavy, padded, and cylindrically shaped bags suspended from the ceiling. Upon being punched, the bag generally sways slightly due to its weight and provides the user with a little element of surprise on its return stroke. It is for this reason that heavy suspended boxing bags are generally used to help the user in increasing their power or to simply practice the style of their punch.

[0005] Freestanding upright bags, like suspended bags, are heavy, padded and cylindrically shaped. However, instead of being suspended from the ceiling they are springedly mounted to the ground. A freestanding upright bag serves virtually the same purpose as a suspended bag and use of the bag does little to develop skills in the boxer.

[0006] A suspended boxing ball or ‘speed ball’ is a teardrop shaped, padded bag suspended underneath a flat platform at around head-height. The bag is allowed pivotal motion in any direction beneath the platform. For example, when the bag is punched it swings upwards, hits the platform and rebounds back to either receive the user’s next punch or hit the front side of the platform and then receive a punch depending on the routine of the user. The user then generally performs a rapid repetition of this motion, thereby practicing both speed and accuracy. There is no movement of the suspended location of the ball and therefore, once again, there is no element of surprise as to where the ball will return once hit.

[0007] Double-ended punching balls are generally spherical padded balls which are elastically tethered at their top and bottom poles to a top platform and a bottom platform respectively. When the ball is punched, the movement more closely resembles the unpredictable nature of a returning punch from an opponent in that the ball is now allowed to move in a vertical plane, that is to the left and right of the user as well as backwards and forwards. This device allows the user to improve skills such as speed and accuracy and also defensive skills such as blocking.

[0008] There are currently no devices known to the applicant allowing the user to simultaneously improve on skills such as speed, accuracy and blocking whereby a target, typically balls are positioned and configured so that, when struck, a simulation of both the high and low targets and the high and low counter punches of a real-life sparring partner occurs.

[0009] There are further no current devices known to the applicant which enable three-dimensional movement of the ball once struck, that is rotational, tiltable and pivotable motion, thereby providing the user with the unpredictable nature of a real life opponent.

[0010] It is therefore an object of the present invention to overcome at least some of the aforementioned problems or to provide the public with a useful alternative.

SUMMARY OF THE INVENTION

[0011] Therefore in one form of the invention there is proposed an exercise training apparatus including:

[0012] a base member adapted to be attached to a surface;

[0013] a support member extending from said base member;

[0014] at least one arm rotatably attached to said support member, and

[0015] a ball attached to a free end of the arm.

[0016] Preferably said arm is further tiltably attached to said support member.

[0017] Preferably said arm is further pivotably attached to said support member.

[0018] Advantageously said arm is rotatably and/or tiltably and/or pivotably attached to said support member.

[0019] Preferably said arm is constructed of a resilient material.

[0020] Preferably said arm is of an elasticity which allows for tension and compression of said resilient arm.

[0021] In preference said arm includes a first arm member and a second arm member, said first arm member adapted to slidably engage said second arm member.

[0022] Preferably said arm includes an arm locking means adapted to lock said first arm member and said second arm member relatively. This allows the user to set each arm of the apparatus at their desired level so that differing reaches of an opponent may be simulated.

[0023] Preferably said ball is mounted to a free end of said second arm member.

[0024] Preferably said support member includes a first member and a second member said first member fixedly attached to said base and adapted to slidably engage said second member.
In preference said support member includes a locking means adapted to lock the second member within the first member. This gives the user the option of height adjustment.

Advantageously said ball is made up of a soft, padded material. This ensures that the ball will not harm the user.

In a further form of the invention there is proposed an exercise training apparatus including:

- a base plate adapted to be mounted to a surface;
- a hollow, cylindrical support member extending outwards from said base plate;
- a shaft that is slidable within said support member and lockable there along;
- at least one practice component rotatably mounted at a predetermined height along said shaft said practice component including a first arm and a second arm, said first arm adapted to slidably engage said second arm; and
- a ball attached to a free end of said second arm.

Preferably said practice component is further pivotably mounted along said shaft.

Preferably said practice component is further tiltably mounted along said shaft.

Advantageously said practice component is rotatably and/or pivotably and/or tiltably mounted along said shaft.

In preference said practice component includes a circular bearing which is journaled around an outer surface of said shaft and provides for smooth movement of said component.

In a still further form of the invention there is proposed an exercise training apparatus including:

- a base plate adapted to be mounted to a surface;
- a hollow, cylindrical support member extending outwards from said base plate;
- a shaft that is slidable within said support member and lockable there along;
- at least one resilient arm rotatably, pivotably and tiltably mounted at a predetermined height along said shaft providing for chaotic three dimensional movement of said arm with respect to said shaft; and
- a ball attached to a free end of said resilient arm.

Preferably said resilient arm includes a circular bearing which is journaled around an outer surface of said shaft and provides for smooth movement of said arm.

**BRIEF DESCRIPTION OF THE DRAWINGS**

The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate several implementations of the invention and, together with the description, serve to explain the advantages and principles of the invention. In the drawings,

**FIG. 1** is a schematic perspective view illustrating an exercise training apparatus in accordance with the invention; and

**FIG. 2** is a schematic perspective view illustrating an exercise training apparatus according to a second embodiment of the invention.

**DESCRIPTION OF THE PREFERRED EMBODIMENTS**

The following detailed description of the invention refers to the accompanying drawings. Although the description includes exemplary embodiments, other embodiments are possible, and changes may be made to the embodiments described without departing from the spirit and scope of the invention. Wherever possible, the same reference numbers will be used throughout the drawings and the following description to refer to the same and like parts.

**FIG. 1** illustrates the training apparatus 10 in accordance with the present invention. A base plate 12 is fixedly mounted to a flat surface 14 using bolts 16, 18, 20 and 22 located at the four corners of the plate 12. Extending upwardly from the plate 12 is a cylindrical support member 24 which is preferably welded to the base plate 12 at a lower end thereof and includes reinforcing elements 26 for added stability. The support member 24 includes an inwardly chamfered upper end 28 defining an opening 30 into which a cylindrical shaft 32 is adapted to be inserted when assembling the training apparatus 10. The cylindrical shaft 32 is adapted to be locked within support member 22 by using any adequate locking means, such as a screw-type vice (not shown) which is well known in the art. Alternatively, the shaft 32 may include a male threaded section (not shown) adapted to engage a female threaded section (not shown) within the support member 22.

It is to be understood that the methods of connection as described herein are by way of example only, and the present invention is not intended to be limited to any one of these methods. For example, bolts 16, 18, 20 and 22 may well be replaced by a suction means on the underside of base plate 11 or other suitable fixing means.

It should be further understood that base plate 12 need not be fixed to the ground and may just as well be fixed to a wall or platform (not shown). This would provide the user of the apparatus 10 with further options as to the type of training they wish to undertake. For example, when mounted to the wall, instead of the apparatus 10 as shown in FIG. 1 functioning in a horizontal plane, it would function in a vertical plane. Another option would be to attach the apparatus 10 to the ceiling. In fact, the apparatus could be fixed to any surface that corresponds with the training requirements of the user.

Since boxing and martial arts exercises involve the powerful striking of the apparatus whether it be a punch, kick, elbow or knee, the base plate 12 is preferably made of strong, heavy metal such as steel so as to lower the centre of gravity of the apparatus 10. However, the invention should not be limited to only this configuration. For example, a wide hollow base (not shown) could be used whereby an internal chamber is filled with water or sand to thereby stabilise the apparatus. This may even provide a further favourable unpredictability to the user in that the entire apparatus may be designed to sway.
A lower punching component 34 and an upper punching component 36 are rotatably connected to shaft 32 such that shaft 32 extends through central apertures 38 and 40 of each component 34 and 36 respectively. Although not shown, the apparatus 10 includes stopping means for locking each component 34 and 36 at a particular height along the shaft 32 whilst allowing each component to rotate freely at that particular height.

The lower component 34 includes a circular housing 42 enclosing an annular roller bearing (not shown) or the like, which defines aperture 38 allowing the component 34 to freely rotate about the central shaft 32. Two identical arms 44 and 46 are connected, preferably by means of a weld, to the housing 42 and extend outwardly at opposite ends thereof. Arm 44 includes two members 44a and 44b of stepped down cross-sectional size such that member 44b is slidable within member 44a. This configuration allows the user to adjust the reach of the apparatus.

Bolt 44c locks the members 44a and 44b in relative position to each other. As mentioned, arm 46 is identical in its configuration to arm 44, i.e. member 46b slides within arm 46a with bolt 46c once again locking the arms in relative position to each other. Spherical balls 48 and 50 are fixedly attached to the ends of arms 44 and 46 respectively through corresponding annular support members 52 and 54 respectively. The balls 48 and 50 effectively act as the target surface when punching is being practised and as a return punch when blocking is being practised.

The upper component 36 comprises substantially identical features to the lower component 34 however, as is illustrated in FIG. 1, the upper component 36 includes three identical arms 56, 58 and 60 disposed equally around a central circular housing 62. Those skilled in the art should now realise how the present invention will aid a boxer, martial artist or any other

It is to be understood that the heights of shaft 32, lower punching component 34 and upper punching component 36 are adjustable to suit the height of the user. This is also of benefit when storing the apparatus 10 away after use in that when all three of the abovementioned members are at their lowest positions, the height of the entire apparatus is almost halved. Furthermore, the components 34 and 36 can also be dismantled from the central shaft 32.

A further embodiment of the present invention is illustrated in FIG. 2. As can be seen, the base plate 12 and supporting member 24 are identical to that shown in FIG. 1 and it is for this reason that the numbers referencing these components appear identical.

A central cylindrical shaft 76 is housed within support member 22 as in the first embodiment however shaft 76 now terminates into a spherical bulb 78 at its upper end. An annular housing 80 which encloses a circular bearing (not shown) is adapted to not only revolve around bulb 78 in a vertical plane (yaw) but is now also capable of tilt or roll around the outer surface of the spherical bulb 78 thereby enabling multi-axial movement.

Attached to housing 80 is an elastic tether 82 which pivots vertically about a horizontally extending clip 84. The elastic tether 82 is attached to a spherical ball 86 preferably by a simple looped connection 88 such that the ball 86 is capable of slight movement about the loop connection 88 when struck, as those skilled in the art would realise.

Attached to housing 80 is an elastic tether 82 which pivots vertically about a horizontally extending clip 84. The elastic tether 82 is attached to a spherical ball 86 preferably by a simple looped connection 88 such that the ball 86 is capable of slight movement about the loop connection 88 when struck, as those skilled in the art would realise.

[0062] FIG. 2 further illustrates the various forms of motion 90, 92, 94, 96 and 98 of the ball 86, tether 82 and housing 80 using dashed lines which indicate the position of the ball 86, tether 82 and housing 80 at two alternate positions 100 and 102 along its path. This movement occurs due to the combination of simple rotation 90 of the housing 80, tilt or roll 92 of the housing 80, pivot 94 of the tether 82 about clip 84, elongation 96 of the tether 82, and slight movement 98 of the ball 86 allowing for a three-dimensional almost unpredictable or chaotic motion of the ball, features of which are common to those of a human opponent.

It should also be made aware that features of one embodiment may well be combined with features of another. For example, a user may well construct a training apparatus having a three-dimensional punching component (as in FIG. 2) attached at the top of the apparatus, and simply a horizontally rotating component (as in FIG. 1) attached at waist height.

The various forms of motion described in the present invention, and more particularly the motion of the arms about the shaft, may be achieved using a wide variety of different joining components. For example, rotation of the arms may be achieved by using a simple ball bearing, needle bearing or bush arrangement as well as the roller bearing arrangement as described. Pivot may be achieved using any swivel joint arrangement while tilt or roll of the arms may be achieved by using any form of rotary joint such as ball and socket joints, universal joints, or even CV joints and washers. It is to be understood that the present invention is not intended to be limited to any one of these components but rather the type of motion performed by such components.

Those skilled in the art should now realise how the present invention will aid a boxer, martial artist or any other
form of fighter in sharpening his/her skills in regard to speed, accuracy and blocking techniques in that the apparatus effectively simulates a human sparring partner. The boxing balls located on the apparatus can either be continuously punched to test speed and accuracy, be blocked so as to simulate a counter-punch or both so that all skills can be tested.

Further advantages and improvements may very well be made to the present invention without deviating from its scope. Although the invention has been shown and described in what is conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope and spirit of the invention, which is not to be limited to the details disclosed herein but is to be accorded the full scope of the claims so as to embrace any and all equivalent devices and apparatus.

In any claims that follow and in the summary of the invention, except where the context requires otherwise due to express language or necessary implication, the word “comprising” is used in the sense of “including”, i.e. the features specified may be associated with further features in various embodiments of the invention.

1. An exercise training apparatus including:
   a base member adapted to be attached to a surface;
   a support member extending from said base member;
   at least one arm rotatably attached to said support member; and
   a ball attached to a free end of the arm.
2. An exercise training apparatus as in claim 1 wherein the said arm is further tiltably attached to said support member.
3. An exercise training apparatus as in claim 1 wherein the said arm is further pivotably attached to said support member.
4. An exercise training apparatus as in claim 1 wherein the said arm is mounted in a manner selected from the group consisting of rotatably, tiltably, and pivotably attached to said support member.
5. An exercise training apparatus as in claim 1 wherein the said arm is constructed of a resilient material.
6. An exercise training apparatus as in claim 5 wherein the said arm is of an elasticity which allows for tension and compression of said tethered arm.
7. An exercise training apparatus as in claim 1 wherein the said arm includes a first arm member and a second arm member, said first arm member adapted to slidably engage said second arm member.
8. An exercise training apparatus as in claim 7 wherein the said arm includes an arm locking means adapted to lock said first arm member and said second arm member relatively.
9. An exercise training apparatus as in claim 8 wherein said ball is mounted to a free end of said second arm member.
10. An exercise training apparatus as in claim 1 wherein said support member includes a first member and a second member said first member being fixedly attached to said base and adapted to slidably engage said second member.
11. An exercise training apparatus as in claim 10 wherein said support member includes a locking means adapted to lock the second member within the first member.
12. An exercise training apparatus as in claim 1 wherein said ball is made up of a soft, padded material.
13. An exercise training apparatus including:
   a base plate adapted to be mounted to a surface;
   a hollow, cylindrical support member extending outwards from said base plate;
   a shaft that is slidable within said support member and lockable there along;
   at least one practice component rotatably mounted at a predetermined height along said shaft;
   said practice component including a first arm and a second arm, said first arm adapted to slidably engage said second arm; and
   a ball attached to a free end of said second arm.
14. An exercise training apparatus as in claim 13 wherein said practice component is further pivotably mounted along said shaft.
15. An exercise training apparatus as in claim 13 wherein said practice component is further tiltably mounted along said shaft.
16. An exercise training apparatus as in claim 13 wherein said practice component is mounted in a manner selected from the group consisting of rotatably, pivotally and tiltably mounted along said shaft.
17. An exercise training apparatus as in claim 13 wherein said practice component includes a circular bearing which is journaled around an outer surface of said shaft and provides for smooth movement of said component.
18. An exercise training apparatus including:
   a base plate adapted to be mounted to a surface;
   a hollow, cylindrical support member extending outwards from said base plate;
   a shaft that is slidable within said support member and lockable there along;
   at least one resilient arm rotatably, pivotally and tiltably mounted at a predetermined height along said shaft providing for chaotic three dimensional movement of said arm with respect to said shaft; and
   a ball attached to a free end of said resilient arm.
19. An exercise training apparatus as in claim 18 wherein said resilient arm includes a circular bearing which is journaled around an outer surface of said shaft and provides for smooth movement of said arm.

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