Rotatable hand supports for performing pushups on a floor or ground surface. The handle of the supports has a grip portion adapted to be grasped by a user. The rotatable base is base has a bottom portion adapted to contact the floor, a top portion rotatably connected to the bottom portion, and a bearing assembly supporting the top portion on said bottom portion. A support connects the handle to the top portion of the base and supports the handle at an elevated position relative to the base and above the floor.
PUSHUP EXERCISE DEVICE

FIELD OF THE INVENTION

[0001] The present invention relates to an exercise device for performing pushups. More particularly, the present invention relates to hand supports having hand grips that are elevated and rotatable relative to the floor so that the user's comfort is improved and range of motion is extended while performing pushups.

BACKGROUND OF THE INVENTION

[0002] The conventional pushup exercise has traditionally been used for strengthening arm muscles. A conventional pushup is performed by lying face down with palms to the floor and by pushing the body up and down with the arms.

[0003] Many types of handgrip devices are known for performing pushups. For example, Acs et. al, U.S. Pat. No. 3,115,338, disclose handles that are rigidly supported on stationary bases. The handles assist the user performing pushups by providing a more adaptable and natural hand gripping position. The handles allow the user to keep a straight wrist rather than a bent wrist. The handles also elevate the user’s hands relative to the floor, thereby increasing the range of motion through which the user moves during the pushup exercise.

[0004] Other handgrip devices provide additional features to improve the muscle conditioning effect of performing pushups. For example, Swisher, U.S. Pat. No. 5,205,802, provides an elongate, elevated base and two hand grips. The invention allows the user to adjust the lateral space between grips for maximum comfort and to vary the range of motion of the exercise. Further, the hand grips are rotatable so that the user can rotate his hands and wrists through a mechanically limited range of motion.

[0005] Hill, U.S. Pat. No. 4,610,448, also discloses hand grips for performing pushups. The hand grips allow the user to rotate his hand about a horizontal axis in order to position the wrist at a comfortable position, and about a vertical axis in order to simultaneously rotate the arm while extending and contracting it.

[0006] Several of the devices in the prior art allow the user to rotate his hands about a vertical axis while performing pushups. Such devices comprise rotatably-connected, planar plates that are arranged in contact with one another. To rotate such devices, the user must overcome the frictional force between the plates, which may be excessive depending on the upper body weight of the user and the coefficient of friction between the plates. Further, rotation of the device may not be smooth due to variations in the force required to initiate rotation compared to the force required to maintain rotation. Therefore, it would be desirable to provide hand supports that can be easily and smoothly rotated about a vertical axis while performing pushups.

[0007] Several of the pushup devices in the prior art provide a handle having a cylindrical profile, which may be comfortable for some users but uncomfortable for others. Therefore, it would be desirable to provide a pushup device that has a plurality of interchangeable handles having grip profiles that are different from one another.

[0008] In the prior art, the various pushup devices vary greatly in size and complexity. However, even the smallest devices are prohibitively large to conveniently travel with in a briefcase, handbag or small luggage. Therefore, it would be desirable to provide a pushup device that is easily collapsible to a compact size so that the user can comfortably travel with the device.

SUMMARY OF THE INVENTION

[0009] The present invention provides hand supports for performing pushups on a floor or ground surface. The hand supports can be easily and smoothly rotated about a vertical axis while performing pushups. The hand supports generally comprise a handle, a rotatable base, and handle support.

[0010] The handle has first and second ends, and an intermediate grip portion adapted to be grasped by a user. The support connects the handle to the top portion of the base and supports the handle at an elevated position relative to the base and above the floor. The support may comprise a U-shaped bracket having a base and a pair of arms. The base and arms may be integrally formed. In one embodiment, at least one support arm is fixed at one end to the top portion of the base and connected at the other end to the handle. In another embodiment, each arm is fixed at one end to the top portion of the base and at the other end to opposed ends of the handle.

[0011] The base has a bottom portion adapted to contact the floor, a top portion rotatably connected to the bottom portion, and a bearing assembly supporting the top portion on the bottom portion. Preferably, each of the top and bottom base portions comprises a generally-planar, circular base plate having a central portion and an outer annular lip. The plates are connected by a central shaft and arranged with the annular lips facing one another. The plates and lips define an internal cavity intermediate the plates.

[0012] The bearing assembly comprises a bearing and cage arranged in the internal cavity between the plates. The bearings separate and support the top plate relative to the bottom plate. The bearings having a diameter large enough to prevent the lips of the top and bottom plates from contacting one another, but small enough so that the bearing assembly can not slide laterally through the gap formed between the lips of plates. At least one of the base plates may include a race formed on the internal cavity side so that the bearings may travel in the race.

[0013] In another embodiment of the invention, the device has a plurality of handles having grip profiles that are different from one another. The handles are interchangeable with one another. In this embodiment, the handles may also have quick connect/disconnect fasteners.

[0014] In a further embodiment of the invention, the device may include an angular position indicator for measuring angular rotation of the handle relative to the bottom portion of the base. The angular position indicator may comprise a pointer and a calibrated dial. The pointer is preferably axially-aligned with the axis of the handle.

[0015] In yet another embodiment of the invention, the device is easily collapsible to a compact size so that the user can comfortably travel with the device. The handle support is movable from a first, extended position supporting the handle at an elevated position relative to the base and a second collapsed position. In this embodiment, the support preferably includes a hinge connecting the support to the
upper portion of the base so that the support is rotatable between a first extended position, and a second position generally co-planar with the base.

[0016] In a further embodiment, both arms of the support are pivotally connected by hinges to the base. In this embodiment, the handle prevents the support from collapsing from the first to the second position when the handle is connected to the base. When the handle is disconnected from the support, the support is freely collapsible. In this embodiment, the first arm is hinged to the top portion of the base and movable to a collapsed position coplanar and overlapping the top portion of the base. The second arm is bifurcated into two segments. The first segment is fixed to the base portion. The second segment is hinged to the first segment and movable to a collapsed position coplanar and overlapping the first arm. Alternatively, at least one support arm is connected to the top portion of the base by a tongue and groove connector.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] FIG. 1 is an isometric view of a device for performing pushups in accordance with an embodiment of the invention;

[0018] FIG. 2 is a side elevational view of the device shown in FIG. 1;

[0019] FIG. 3 is an exploded isometric view of the device shown in FIG. 1;

[0020] FIG. 4 is a top plan view of the device shown in FIG. 1;

[0021] FIG. 5 is a top plan view of a device for performing pushups in accordance with another embodiment of the invention;

[0022] FIG. 6 is an exploded isometric view of the device shown in FIG. 5;

[0023] FIG. 7 is an isometric view of collapsible devices for performing pushups in accordance with a further embodiment of the invention;

[0024] FIG. 8 is an isometric view of a device for performing pushups having an inclined ramp in accordance with another embodiment of the invention;

[0025] FIG. 9 is a side elevational view of a handle for use on a pushup device in accordance with embodiments of the invention;

[0026] FIG. 10 is a side elevational view of a handle for use on a pushup device in accordance with embodiments of the invention;

[0027] FIG. 11 is a side elevational view of a handle having a quick connect fastener for use on a pushup device in accordance with embodiments of the invention; and,

[0028] FIG. 12 is an isometric view of a device for performing pushups having a collapsible construction in accordance with a further embodiment of the invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0029] For the purpose of illustrating the invention, there is shown in the accompanying drawings several embodiments of the invention. However, it should be understood by those of ordinary skill in the art that the invention is not limited to the precise arrangements and instrumentalities shown therein and described below.

[0030] The pushup device in accordance with preferred embodiments of the present invention is illustrated in FIGS. 1-12 wherein like reference numerals are used throughout to designate like elements.

[0031] A first embodiment of the pushup device, designated generally by reference numeral 10, is shown in FIGS. 1-4. The pushup device 10 generally comprises a handle 12, a rotatable base 16, and a support assembly 14 that connects the handle 12 to the base 16 and supports the handle 12 at an elevated position relative to the base 16. The handle 12 is adapted to be grasped by the user. The base 16 is adapted to rest on the floor or other support surface.

[0032] In the embodiment shown in FIGS. 1-4, the handle 12 comprises a solid, cylindrical bar segment, which is made of a strong, rigid material such as wood, plastic, metal or the like. The handle 12 preferably has an axial length slightly larger than the width of an adult human hand and a diameter that allows an adult human to comfortably grasp the handle 12 while performing pushups. For example, the handle 12 may be about 4½ inches long and about 1½ inches in diameter. However, it should be appreciated that the dimensions of the handle 12 may be reduced or enlarged to accommodate users of all ages and sizes.

[0033] A threaded bore 20 extends axially into each end of the handle 12. The bores 20 are arranged to receive removable fasteners 22, which removably secure the handle 12 to the support 14. In a preferred embodiment, the fasteners comprise bolts having enlarged heads 24 so the user can install and tighten the fasteners by hand. The removable fasteners allow the handle 12 to be disassembled from the device without damaging or permanently altering the device.

[0034] In the embodiment illustrated in FIGS. 1-4, the fasteners 22 have threaded shanks 23, which cooperatively engage the threaded bores 20 in the handle 12. In one embodiment, the threads 23 on one fastener 22 may have an opposite rotation than the other fastener 22. In other words, clockwise rotation tightens one fastener 22 while counterclockwise rotation tightens the other fastener 22. This construction makes the handle 12 self-locking by rotation about the lengthwise axis of the handle 12. Also, the user may tighten the handle 12 more snugly by rotating the handle 12 with his full hand rather than by rotating the fasteners with his fingers.

[0035] As seen in FIGS. 1-4, the fasteners 22 may have rounded heads 24 to prevent injury to the user. Alternatively, the fastener heads 24 could have a finite number of sides, such as a hex head, or have a knurled peripheral surface for easier rotation by hand. Alternatively, the fastener heads 24 could have a slotted or socketed end for installation with a tool.

[0036] Referring to FIGS. 1 and 3, the support assembly 14 comprises a U-shaped bracket 26, having a central base 26a and a pair of arms 26b, 26c. In the embodiment illustrated in FIGS. 1-4, the arms 26b, 26c and base 26a are integrally formed from a single piece of strong, rigid material such as plastic or metal. Alternatively, the arms 26b, 26c and base 26a of the bracket 26 could be fabricated as
separate components, which are adhered or otherwise fastened together such as shown in FIG. 6.

[0037] In a preferred embodiment, the arms 26b, 26c of the bracket 26 have an upwardly-tapering or triangular shape, which provides a strong connection interface to the base 26a and sufficient hand and wrist clearance near the handle 12. An aperture 28 extends through each arm proximate the apex. The apertures 28 align with the threaded bores 20 in the handle 12. The bracket 26 is fastened to the top side of the top plate 32 of the base 16 by adhesives, screws or other fastening means.

[0038] The rotatable base 16 has a bottom portion adapted to contact the floor or other support surface, and a top portion that is freely rotatable relative to the bottom portion. The bottom and top portions comprise generally-planar, circular plates 30, 32, respectively. Each plate 30, 32 has a central portion 30b, 32b and an outer, annular lip 30a, 32a, which is preferably integrally formed with the central portion 30b, 32b of the plates. The plates 30, 32 are made from a strong, rigid material such as metal or plastic.

[0039] The plates 30, 32 are rotatably connected by a shaft 34, which extends through a central aperture 36 in the top plate 32 and connects to a central, axially-aligned socket 38 in the bottom plate 30. The plates 30, 32 are arranged with the annular lips 30a, 32a facing one another so that an internal cavity is formed intermediate the plates 30, 32.

[0040] A bearing assembly 40 is arranged in the internal cavity between the plates 30, 32. The bearing assembly 40 supports the top plate 32 and enables the top plate 32 to freely and smoothly rotate relative to the bottom plate 30. In a preferred embodiment, the bearing assembly 40 comprises a plurality of ball bearings 42 and cage 44. The diameter of the ball bearings 42 is large enough to prevent the lips 30a, 32a of the bottom and top plates 30, 32 from contacting one another, but small enough so that the bearing assembly 40 can not slide laterally-outwardly through the small gap “G” between the lips 30a, 32a, as best seen in FIG. 2. Preferably, the diameter of the cage 44 is slightly smaller than the diameter of the central portion 30b, 32b of the plates. The bearings 42 should be sufficient in number to support the upper body weight of the user without unduly restricting the ease with which the handle 12 can be rotated during the exercise.

[0041] Further embodiments of the invention are described in FIGS. 5-11, wherein elements similar to the elements described above share the same reference numeral but with an additional integer prefix.

[0042] An alternative embodiment of the invention having additional novel features is shown in FIGS. 5 and 6. The device 110 is similar in construction to the device disclosed in FIGS. 1-4. However, the device 110 has a wider base, and anti-skill base pad, an annular position indicator so that the user can accurately measure the degree of rotation of the handle 112, and a key that prevents the handle 112 from rotating about its longitudinal axis.

[0043] Referring to FIG. 5, the bottom plate 130 has a central portion 130b, an annular lip 130a, and an annular, radially-outwardly, downwardly-inclined flange 146, which increases the footprint of the base 116, thereby providing increased stability compared to the device 10 disclosed in FIGS. 1-4. The flange 146 also improves the aesthetic appearance of the device 110.

[0044] Referring to FIG. 6, the base 116 may also include an annular race 149 on the surface of the internal central portion 130b, 132b of one or more of the plates 130, 132. The race 149 helps prevent lateral movement of the plates 130, 132 relative to one another and prevents friction on the shaft 134 without unduly preventing relative rotational movement of the plates 130, 132.

[0045] An anti-skill pad 148 is preferably adhered to the bottom of the bottom plate 130. The anti-skill pad 148 is preferably made of a soft, tacky material such as rubber. The anti-skill pad 148 not only prevents the device 110 from sliding on smooth surfaces, but also dampens vibration and noise produced while performing pushups.

[0046] The angular position indicator comprises a pointer 150 and a calibrated dial. Preferably the pointer 150 is axially-aligned with the longitudinal axis of the handle. As best seen in FIG. 5, the pointer 150 comprises a tapered cap affixed to the head 124 of one of the fasteners 122. The calibrated dial is preferably attached to the bottom base plate 130. In the embodiment shown in FIG. 5, the dial comprises a series of regularly-spaced marks 151 applied to the flange 146 of the base plate 130. Alternatively, the dial may comprise a separate ring, which has regularly spaced marks or serrations, and which is rotatable on the bottom plate 130 so that the pointer can be “zeroed” with the dial.

[0047] During pushups, the torque exerted on the handle by the user may overcome the tightening force of the fasteners 122 and cause the handle 112 to rotate. To prevent the handle 112 from rotating about its longitudinal axis “H”, the embodiment illustrated in FIGS. 5-6 includes a tab or key 152, which is formed on at least one end of the handle 112. The tab 152 cooperatively engages a slot 154 in the upper portion of one of the arms 126c.

[0048] An additional embodiment of the invention that can be folded or collapsed for more convenient storage or travel is disclosed in FIG. 7. The collapsible device 210 is similar in construction to the device 10 disclosed in FIGS. 1-4, except that the device 210 has a collapsible or foldable handle support 214. In this embodiment, the handle support 214 comprises a U-shaped bracket 226 having a central base 227 and a pair of arms 229, 231. One arm 229 is pivotally connected to the base 227 by a hinge 233a so that the bracket arm 229 ismovable from a first, upwardly-extending position supporting the handle 212 at an elevated position relative to the base, and a second collapsed position lying flat against and generally coplanar with the base 227.

[0049] The second arm 231 is bifurcated into two segments 231a, 231b. The bottom end of the first segment 231a is fixed to the base 227. The second segment 231b is pivotally connected to the first segment 231a by the second hinge 233b, which is similar to the first hinge 233a. The first segment 231b is short compared to the height of the second segment 231b. Preferably, the height of the first segment is slightly larger than the thickness of the first arm 229 so that the second segment 231b folds down flat against and generally coplanar with the first arm 229.

[0050] The hinges 227 shown in FIG. 7 only permit inward rotation of the arms 229, 231. Once connected to the arms 229, 231, the handle 212 prevents rotation of the arms
and locks the support in the first position. To collapse the support 214, the user simply removes the handle 212 and folds downwardly the first arm 229 and then the second segment 231b of the second arm 231.

[0051] An additional embodiment of the invention is shown in FIG. 8. In this embodiment, a rotatable pushup device 310 interchanges with an inclined ramp 360. The device 310 is similar in construction to the devices shown in FIGS. 1-7. In this embodiment, the handle support 314 comprises a pair of arms 326 fixed directly to the top plate 332 of the base 316.

[0052] The ramp 360 supports and inclines the device 310 at an angle to vary the user’s range of motion. The ramp 360 has a socket 361 formed in the inclined surface 362. The socket 361 has a diameter slightly larger than the diameter of the base 316, so that the base 316 fits snugly into the socket 361. The device 310 includes a pointer 350, which registers with a plurality of equally-spaced, angular position marks on the inclined surface proximate the periphery of the socket 361.

[0053] In the embodiments shown in FIGS. 1-8, the handle has a basic cylindrical profile. However, in alternative embodiments of the invention, the handle may have an irregularly-shaped profile that is easier to grasp by the user.

[0054] Referring to FIG. 9, the handle 412 comprises a rigid core 418 enveloped by a contoured grip 421. Preferably, the core 418 comprises a cylindrical bar segment, which is made of a strong, rigid material such as wood, plastic, metal or the like. A threaded bore 420 extends axially into each end of the core 418. The bores 420 are arranged to receive threaded fasteners 422, which removably secure the handle 412 to the support of the pushup device. The contoured grip 421 has a profile that allows the user’s palm and fingers to grasp the handle 412 more comfortably. Preferably, the contoured grip 421 is made from a deformable material in order to cushion the user’s hand.

[0055] In another embodiment shown in FIG. 10, the handle 512 comprises a rigid core 518 that has been formed with a contoured profile. The profile is selected to allow the user’s palm and fingers to grasp the handle more comfortably than the cylindrical handle shown in FIGS. 1-4. In this embodiment, the handle 512 is removably fastened to the support with a single, elongate fastener 522 such as a carriage bolt. The fastener 522 extends through a central, axial bore 519 in the handle 512.

[0056] In yet another embodiment shown in FIG. 11, the handle 612 comprises a cylindrical bar segment 618, which is made of a strong, rigid material. Instead of threaded fasteners, the handle 612 has a pair of support pins 665, 667 fixed to opposed ends of the handle 612. The pins are generally co-axial with the longitudinal axis of the segment. At least one of the pins 667 is retractable and has a quick connect/disconnect construction, which more quickly attaches the handle 612 to the support than the threaded fasteners described above. Referring to FIG. 11, the retractable pin 667 comprises a stem 669 that retracts into and extends out from an axial socket 671 in the bar segment 618. The stem 669 is normally biased outwardly to an extended position by an internal compression spring 673.

[0057] An additional embodiment of the invention that can be folded or collapsed for more convenient storage or travel is disclosed in FIG. 12. The collapsible device 710 is similar in construction to the device 10 disclosed in FIGS. 1-4, except that the device 710 has a collapsible or foldable handle support 714. In this embodiment, the handle support 714 comprises a U-shaped bracket 726 having a central base 726a and a pair of arms 727. The arms 727 are removably connected to the base 726a by a tongue and groove connection. The bottom of each arm 727 has a tongue 771 that slideably engages a groove 773 in the base 726a. The bracket 726 is fixed to the upper plate 732 of the base.

[0058] The above-described devices are generally used in pairs by initially placing the devices on the floor or other support surface. The user then grasps the handles to perform pushups. During the exercise, the user can easily and smoothly rotate his hands about a vertical axis relative to the floor due to the bearing assembly within the base. The user can thereby stretch and condition the muscles that provide rotary arm movement in addition to strengthening the arm and shoulder muscles in the manner normally achieved by performing traditional pushups.

[0059] While the principles of the invention have been described above in connection with specific embodiments, it is to be clearly understood that this description is made only by way of example and not as a limitation on the scope of the invention.

1. A device for performing pushups on a floor or ground surface, comprising:
   a) a handle having first and second ends, said handle having a grip portion adapted to be grasped by a user;
   b) a base having a bottom portion adapted to contact the floor, a top portion rotatably connected to said bottom portion, and a bearing assembly supporting said top portion on said bottom portion; and,
   c) a support for connecting said handle to said top portion of said base and for supporting said handle at an elevated position relative to said base and above the floor.

2. The device recited in claim 1, wherein each of said top and bottom base portions comprises a generally-planar, circular base plate having a central portion and an outer annular lip, said plates being connected by a central shaft and arranged with said annular lips facing one another, said plates and lips defining an internal cavity intermediate said plates.

3. The device recited in claim 2, wherein said bearing assembly comprises a bearing and cage assembly arranged in said internal cavity, said bearings separating and supporting said top plate relative to said bottom plate.

4. The device recited in claim 3, wherein at least one of said base plates includes a race formed on the internal cavity side, said bearings traveling in said race.

5. The device recited in claim 3, said bearings having a diameter large enough to prevent the lips of said top and bottom plates from contacting one another, but small enough so that the bearing assembly can not slide laterally through the gap formed between the lips of said plates.

6. The device recited in claim 1, said support comprising a U-shaped bracket having a base and a pair of arms.

7. The device recited in claim 6, wherein said base and said arms are integrally formed.
8. The device recited in claim 1, said support comprising at least one support arm fixed at one end to the top portion of said base and connected at the other end to said handle.

9. The device recited in claim 8, wherein said support comprises a pair of support arms, each arm being fixed at one end to the top portion of said base and at the other end to opposed ends of said handle.

10. The pushup device recited in claim 1, wherein said handle is removable from said support.

11. The pushup device recited in claim 10, including a second handle that can be interchanged with said first handle, said second handle having a grip portion that is different than the grip portion of said first handle.

12. The pushup device recited in claim 11, wherein at said first and second handles include a quick connect/disconnect fastener.

13. The pushup device recited in claim 1, including an angular position indicator for measuring angular rotation of said handle relative to said bottom portion of said base.

14. The pushup device recited in claim 13, said angular position indicator comprising a pointer axially-aligned with said handle and calibrated dial.

15. The pushup device recited in claim 1, wherein said support is movable from a first, extended position supporting said handle at an elevated position relative to said base and a second collapsed position.

16. The device recited in claim 15, including a hinge connecting said support to said upper portion of said base so that said support is rotatable between said first position and a second position generally co-planar with said base.

17. The device recited in claim 16, wherein said handle prevents said support from collapsing from said first to said second position when said handle is connected to said base.

18. The device recited in claim 17, wherein said handle is removable from said support, and said support is freely collapsible when said handle is disconnected from said support.

19. The device recited in claim 16, wherein said support comprises a first and second support arms, said first arm being hinged to said top portion of said base and movable to a collapsed position coplanar and overlapping said top portion of said base, said second arm being bifurcated into two segments, said first segment fixed to said base portion, said second segment being hinged to said first segment and movable to a collapsed position coplanar and overlapping said first arm.

20. The device recited in claim 1, wherein said support comprises at least one support arm connected to said top portion of said base by a tongue and groove connector.

21. A device for performing pushups on a floor or ground surface, comprising:

   a) a plurality of handles having first and second ends and a grip portion adapted to be grasped by a user, each grip portion being different than another;

   b) a base having a bottom portion adapted to contact the floor, a top portion that is rotatably connected to said bottom portion, and a bearing assembly supporting said top portion on said bottom portion; and,

   c) a support for removably connecting one of said handles to said top portion of said base and for supporting said handle at an elevated position relative to said base and floor; and,

   d) an angular position indicator for measuring angular rotation of said handle relative to said bottom portion of said base;

wherein said support is movable from a first, extended position supporting said handle at an elevated position relative to said base and a second collapsed position; wherein said handles are freely connectable and interchangeable with said support.

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