Weight bars are disclosed that provide an enhanced workout. Specifically, weight bars of the present invention include a vibration mechanism that creates a vibration in the weight bar. Weight bars of the present invention can be configured to be held in one hand or in both hands. Additionally, the weight bars of the present invention can include a rechargeable power source for the vibration mechanism. While not in use, the weight bars of the present invention can rest on a base member. The base member may include a charging plug that mates with the charging port such that the power source for the vibration mechanism can recharge while resting on the base member.
VIBRATING WEIGHT BAR
CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] N/A.

BACKGROUND OF THE INVENTION

[0002] 1. The Field of the Invention
[0003] The present disclosure generally concerns weightlifting exercise equipment. More specifically, the present disclosure concerns exercise weight bars that vibrate.
[0004] 2. The Relevant Technology
[0005] Exercise weight bars including dumbbells and barbells are well known in the art and are widely used as part of weight-based exercise training. For example, U.S. patent application Ser. No. 12/847,813 titled “Weightlifting Device with Mechanism for Disengaging Weight Plates,” which is incorporated herein by this reference, discloses an exercise weight bar. Recent research indicates that creating a vibration in a weight bar while a person is using the weight bar in a training exercise (commonly referred to as “vibration training”) can greatly increase the quality of the exercise. Among other benefits, vibration training may increase blood flow, which can speed up recovery from a workout or rehabilitation from an injury. An increase in blood flow may also help to bring restorative nutrients to muscle cells and aid in the removal of metabolic waste from muscle cells.
[0006] Creating a weight bar having a vibration that is sufficiently strong to achieve these benefits can be difficult. For example, the mechanism that creates the desired vibration may be large and interfere with the use of the weight bar. In addition, the weight of the vibration mechanism may create an imbalance in the weight bar. Thus, an improved vibrating weight bar is needed.

BRIEF SUMMARY OF THE INVENTION

[0007] Weight bars of the present invention vibrate in order to provide an enhanced workout. Weight bars of the present invention can be configured to be held by a user in one hand or in both hands. Additionally, the weight bars of the present invention can include a rechargeable power source for the vibration mechanism.
[0008] In one exemplary embodiment, an exercise weight bar can include a handle having a first end, a second end, and a central axis that extends between the first and second ends. A first cavity that is linked to a first end of the handle can at least partially define a first interior space. The first cavity can at least partially enclose battery contacts or a battery. A second cavity that is linked to a second end of the handle can at least partially define a second interior space. The second cavity can be linked to the second end of the handle and at least partially enclosing a motor and an eccentric weight. The motor can be powered by the battery and the eccentric weight can be rotatable by the motor about the axis of the handle and can have a center of mass that is radially offset from the axis of the handle.
[0009] In another embodiment, an exercise weight bar can include a handle having a central axis, a first end and a second end. A first cavity that is linked to the first end of the handle can at least partially define a first interior space. A second cavity that is linked to the second end of the handle can at least partially define a second interior space. The weight bar can further comprise a vibration assembly, which includes battery contacts that is at least partially enclosed within the first cavity, a battery that is at least partially enclosed within the first cavity, a motor that is at least partially enclosed within the second cavity, a first gear that is at least partially enclosed within the second cavity, a second gear that is at least partially enclosed within the second cavity, and an eccentric weight that is at least partially enclosed within the second cavity. To create a vibration, the eccentric weight can have a center of mass that is radially offset from the axis about which it rotates.
[0010] In yet another embodiment, a weight bar system can include a weight bar and a base member. The weight bar can include a handle having a first end, a second end, and an axis extending therebetween. A first cavity can be linked to the first end of the handle and at least partially define a first interior space. A second cavity can be linked to the second end of the handle and at least partially define a second interior space. The weight bar can also include a vibration assembly, which can include a rechargeable battery at least partially enclosed within the first cavity, a charging port that is in electric communication with the battery allowing the battery to be recharged without being removed from the first cavity, a motor at least partially enclosed within the second cavity, and an eccentric weight at least partially enclosed within the second cavity. The eccentric weight can have a center of mass that is radially offset from the axis about which it rotates. The base member can support the weight bar while the weight bar is not being used. The base member can also have a charging plug that is configured to mate with the charging port on the weight bar so that the battery can be charged while the weight bar is resting on the base member.
[0011] Additional features and advantages of the invention will be set forth in the description which follows, and in part will be obvious from the description, or may be learned by the practice of the invention. The features and advantages of the invention may be realized and obtained by means of the instruments and combinations particularly pointed out in the appended claims. These and other features of the present invention will become more fully apparent from the following description and appended claims or may be learned by the practice of the invention as set forth hereinafter.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] To further clarify the above and other advantages and features of the present invention, a more particular description of the invention will be rendered by reference to specific embodiments thereof which are illustrated in the appended drawings. It is appreciated that these drawings depict only typical embodiments of the invention and are therefore not to be considered limiting of its scope. The invention will be described and explained with additional specificity and detail through the use of the accompanying drawings in which:
[0013] FIG. 1 illustrates a perspective view of a vibrating weight bar system, including a weight bar and a base member, according to one exemplary embodiment of the present invention;
[0014] FIG. 2 illustrates a cross-sectional view of the weight bar of FIG. 1;
[0015] FIG. 3 illustrates a perspective view of a motor, gears, and an eccentric weight for use within a weight bar; and
FIG. 4 illustrates a perspective view of the base member of FIG. 1.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Weight bars of the present invention vibrate in order to provide an enhanced workout. Weight bars of the present invention can be configured to be held by a user in one hand or in both hands. Additionally, the weight bars of the present invention can include a rechargeable power source for the vibration mechanism.

In one exemplary embodiment of the present invention, an exercise weight bar can be configured to be held by a user in one hand. One or more cavities can be linked to the handle. The one or more cavities can at least partially enclose a vibration assembly that is configured to create a vibration in the weight bar. A vibration assembly may include a battery, a motor, one or more gears, and an eccentric weight. The battery may be rechargeable and be in electric communication with a charging port. The weight bar can be configured to rest on a base member, which is shaped to receive the weight bar when not in use. The base member can further include a charging plug that mates with the charging port to recharge the battery in the vibration assembly.

FIG. 1 shows one embodiment of a vibrating weight bar system 100. Vibrating weight bar system 100 can include a weight bar 110 and a base member 180, on which the weight bar can rest while it is not in use. Weight bar 110 includes a handle 114 and a vibration assembly (described in more detail hereafter), and one or more weight plates 140. Handle 114 includes a first cavity 112a, a second cavity 112b, a first weight plate mount 116a, and a second weight plate mount 116b. These handle portions may be integrally formed as a single unit, or they may be separate components. Handle 114 also includes a longitudinal axis that extends through the handle. The longitudinal axis may be through the center of handle 114 or offset from the center of handle 114. One or more weight plates 140 can be selectively secured to first and second weight plate mounts 116a, 116b.

One will appreciate that a handle (e.g., 114) can vary in size and shape. In the embodiment illustrated in FIG. 1, handle 114 includes a portion sized to be gripped in one hand of a user. That is, exercise weight bar 110 is configured as a dumbbell with a portion of handle 114 being generally sized in length and circumference to be held by one hand. In other embodiments of the present invention, a handle may be sized to be held by two hands, such as a barbell for use in performing two-handed exercises, such as bench press, curls, etc. Further, an exercise weight bar according to the present invention may be configured as a barbell with a handle that is sized to be held by two hands. One will also appreciate that handle 114 may be bent or curved to accommodate various weight training exercises.

Handle 114 can also include an outer grip portion 118. Grip 118 can assist in providing a slip-resistant grip for a user during an exercise. For example, grip 118 can include a textured surface or it can be made from a non-slip material, such as rubber or foam.

A handle can also include one or more cavities. For example, handle 114 includes a first cavity 112a and a second cavity 112b. First and second cavities 112a and 112b can be an integral part of handle 114 or they can be formed separately from, and securely affixed to handle 114. One will appreciate that when first and second cavities 112a and 112b are formed separately from handle 114, first and second cavities 112a and 112b can be mounted, attached, coupled, or otherwise joined together.

First and second cavities 112a, 112b can have a variety of different shapes and sizes. For example, first and second cavities 112a, 112b can be cylindrical and have rounded outer surfaces. In other embodiments, first and second cavities 112a, 112b can have flat outer surfaces. For example, cavities 112a and 112b may be cube shaped. In addition to shape, first and second cavities 112a and 112b can have a variety of different sizes. The size of first and second cavities 112a and 112b may be determined in part, by the size of a vibration assembly (discussed in more detail hereafter) that the cavities accommodate.

In addition, first and second cavities 112a, 112b can, at least partially, define interior spaces (e.g., 120a and 120b). FIG. 2 provides a cross-sectional view of weight bar 110 in which first and second interior spaces 120a and 120b can be seen. In the illustrated embodiment, first cavity 112a defines first interior space 120a and second cavity 112b defines second interior space 120b. First and second interior spaces 120a and 120b can be used to enclose in whole or in part a vibration assembly.

The vibration assembly illustrated in FIG. 2 includes battery contacts 121, a battery 122, a motor 124, two gears 126 and 128, and an eccentric weight 130. It will be understood by one of ordinary skill in the art that a vibration assembly may include additional or different components from those illustrated in FIG. 2 to create a desired vibration.

FIG. 2 illustrates that battery 122 is enclosed within first interior space 120a. Battery 122 can be any number of different batteries. For example, battery 122 can be a lithium ion battery, an alkaline battery, or another type of battery. Battery contacts 121 can be any contacts that are configured to connect to any type of battery. Battery 122 can also be rechargeable. In order to recharge battery 122, the battery can be removed from first cavity 112a and connected to an external charging device. Alternatively, battery 122 can be configured to be recharged while remaining within first cavity 112a. For example, battery 122 can be in electric communication with a charging port 123. As will be discussed in greater detail below in connection with FIG. 4, charging port 123 can be compatible with any number of different charging plugs.

In other embodiments, battery 122 may not be rechargeable. In embodiments where the battery is not rechargeable, the cavity that contains the battery can include a door that provides access to the battery so that a user can disconnect the battery from the battery contacts and replace the depleted battery with a new one.

Second interior space 120b includes a motor 124, a first gear 126, a second gear 128, and an eccentric weight 130. Battery 122 is in electric communication with motor 124 through a wire 132. Wire 132 can pass through a hollow chamber within handle 114 that connects first interior space 120a with second interior space 120b. In alternative embodiments of the present invention, wire 132 can connect battery 122 with motor 124 without passing through handle 114.

In alternative embodiments of the present invention, different components of a vibration assembly may be contained within different cavities. For example, in one embodiment, battery contacts 121, battery 122 and motor 124 can be contained within a first cavity with gears and an eccentric weight contained within a second cavity, and a shaft extend-
ing through the interior of handle 144 to couple motor 124 to the gears and eccentric weight. In another embodiment, each of the components in a vibration assembly may be contained within the same cavity. In such an embodiment, an exercise weight bar may only include a single cavity. In yet another embodiment, weight bar 110 can include two complete vibration assemblies (i.e., battery contacts, battery, motor, gears and eccentric weight), with one complete vibration assembly located in the first cavity 112a, a second complete vibration assembly located in the second cavity 112b, and one or more switches electrically coupled to the motors, such that a user can selectively activate only one of the vibration assemblies at a time or selectively activate both vibration assemblies simultaneously. One of the vibration assemblies may also include a control for selectively reversing the direction of rotation of the motor so that the two vibration assemblies can be selectively set to rotate in the same rotational direction or can be selectively set to counter-rotate in opposite rotational directions relative to one another, thereby selectively varying the amplitude of vibration produced.

FIG. 3 illustrates in greater detail motor 124, first gear 126, second gear 128, and eccentric weight 130. As can be seen in FIG. 3, motor 124 rotates first gear 126 about a first axis 134. First gear 126 engages second gear 128 such that rotation of first gear 126 causes rotation of second gear 128. Second gear 128 rotates about a second axis 136. Second axis of rotation 136 can extend through the middle of handle 114 or it can be offset from the middle of handle 114. Eccentric weight 130 is linked to second gear 128 such that rotation of second gear 128 about second axis 136 causes eccentric weight 130 to also rotate about second axis 136. For example, FIG. 3 illustrates in dashed lines a second position 138 of eccentric weight 130 after a 180 degree rotation from its position in solid lines.

In order to create a vibration, the eccentric weight can have a center of mass that is offset from the axis about which the eccentric weight rotates. For example, eccentric weight 130 can have a center of mass 140. As eccentric weight 130 rotates, it creates a vibration. The strength and frequency of the vibration can be determined by a number of different variables, including the speed at which the eccentric weight rotates, the distance that the eccentric weight’s center of mass is from its axis of rotation, and the size of the eccentric weight.

In another embodiment of the present invention, an eccentric weight 130 may be linked to and rotated directly by a motor 124 such that first gear 126 and second gear 128 are unnecessary. In this embodiment, eccentric weight 130 would rotate about a first axis 134.

Weight bar 110 can further include a mechanism to selectively activate the vibration assembly. The mechanism can be a button, switch, or lever. In one embodiment, the vibration assembly may be automatically activated when the weight bar 110 is removed from the base member. In another embodiment, the handle 114 of the weight bar 110 may have contacts that activate the vibration assembly when a user’s hand grasps the handle 114.

Referring back to FIG. 1, handle 114 also includes a first weight plate mount 116a and a second weight plate mount 116b that are configured to receive weight plates 140. First and second weight plate mounts 116a and 116b can be formed as an integral piece with handle 112 or they can be formed as separate pieces and later coupled to handle 112 and/or first and second cavities 112a, 112b.

Weight plates 140 can be removably secured to first and second weight plate mounts 120a and 120b, such that a user can select the amount of weight to place on weight plate mounts 120a and 120b. Weight plates 140 may also be permanently linked to first and second weight plate mounts 120a and 120b. In alternative embodiments, an exercise weight bar 110 may not include weight plate mounts 120a, 120b, or weight plates 140. In these embodiments, no additional weight may be included in the weight bar 110, or additional weight may be included within handle 112, cavities 112a, 112b, or in another part of weight bar 110.

FIG. 4 provides a perspective view of base member 180. Base member 180 can be shaped such that a weight bar 110 can rest on top of base member 180. For example, base member 180 has a first recess 182a that is shaped to accommodate the shape of a first cavity 112a. Base member 180 also has a second recess 182b that is shaped to accommodate the shape of a second cavity 112b.

Base member 180 also includes a charging plug 184. Charging plug 184 can be configured to mate with a charging port (e.g., 123) in order to charge a battery (e.g., 122) within a weight bar while the weight bar is resting on the base member 180. The base member 180 can further include a cord (not shown) that plugs into an outlet to provide power to the charging plug 184. In alternative configurations, the charging plug may be separate from the base member such that the weight bar is not required to be resting on the base member in order to recharge the battery.

It will be understood by one of ordinary skill in the art that the components of the vibrating weight bar system 100 may be formed from any suitable materials. For instance, the weight bar 110 and a base member 180 may be formed of metal, plastic, ceramic, rubber, foams, composite materials, or combinations thereof. Likewise, the components may be formed by any suitable manufacturing processes. Such manufacturing processes may include, but are not limited to, casting, forging, extruding, molding, including blow molding and injection molding, or combinations thereof.

INDUSTRIAL APPLICABILITY

The exercise weight bars of the present invention are intended to provide an enhanced workout by creating a vibration within the weight bar. In particular, the weight bar of the present invention includes one or more cavities that contain a vibration assembly. The vibration assembly can include battery contacts, a battery, a motor, one or more gears, and an eccentric weight. The weight bar of the present invention can further include weight plate mounts that are configured to receive weight plates. A user can select and secure to the weight bar the amount of weight that he or she desires.

The weight bar system of the present invention can also include a base member. The base member can be shaped to receive the weight bar when it is not in use. The base member can further be configured to charge the battery of the vibration assembly while the weight bar rests on the base member. The weight bar can further include a button or switch for a user to selectively activate or deactivate the vibration assembly.

What is claimed is:

1. An exercise weight bar comprising: a handle having a first cavity that at least partially defines a first interior space, a second cavity that at least partially defines a second interior space, and a longitudinal axis;
battery contacts at least partially enclosed within the first cavity;
a motor at least partially enclosed within the second cavity, the motor being in electrical communication with the battery contacts;
an eccentric weight at least partially enclosed within the second cavity, the eccentric weight being rotatably linked to the motor;
wherein the first cavity is shaped to at least partially enclose a battery;
wherein the eccentric weight is rotatable by the motor about the longitudinal axis; and
wherein the eccentric weight has a center of mass that is radially offset from the axis of the handle.
2. The exercise weight bar of claim 1 wherein the handle further comprises a first weight plate mount and a second weight plate mount.
3. The exercise weight bar of claim 2 wherein the first and second weight plate mounts can receive and secure one or more weight plates.
4. The exercise weight bar of claim 1 further comprising a battery at least partially enclosed within the first cavity.
5. The exercise weight bar of claim 4 wherein the battery is rechargeable.
6. The exercise weight bar of claim 5 further comprising a charging port that is in electric communication with the battery.
7. The exercise weight bar of claim 6 wherein the charging port mates with a charging plug that is positioned on a base member.
8. The exercise weight bar of claim 1 wherein at least a portion of the surface of the handle comprises a slip resistant grip.
9. The exercise weight bar of claim 1 wherein the handle is designed to be gripped in one hand of a user during an exercise.
10. A weight bar comprising:
a handle having a first cavity at least partially defining a first interior space, and a second cavity at least partially defining a second interior space; and
a vibration assembly comprising:
battery contacts at least partially enclosed within the first cavity;
a motor at least partially enclosed within the second cavity, the motor being in electric communication with the battery contacts;
a first gear at least partially enclosed within the second cavity, the first gear being in mechanical communication with the motor and further being rotatable by the motor about a first axis;

second gear, wherein the eccentric weight rotates about the second axis when the second gear is rotated, and wherein the eccentric weight has a center of mass that is radially offset from the second axis.

11. The exercise weight bar of claim 10 wherein the handle further comprises a first weight plate mount and a second weight plate mount.
12. The exercise weight bar of claim 11, wherein the first and second weight plate mounts can receive and secure one or more weight plates.
13. The exercise weight bar of claim 10 further comprising a battery at least partially enclosed within the first cavity.
14. The exercise weight bar of claim 13 wherein the battery is rechargeable.
15. The exercise weight bar of claim 14 further comprising a charging port that is in electric communication with the battery.
16. The exercise weight bar of claim 15 wherein the charging port mates with a charging plug that is positioned on a base member.
17. A selectively rechargeable vibrating weight bar system comprising:
a weight bar having:
a handle including a first cavity that at least partially defines a first interior space, a second cavity that at least partially defines a second interior space, and a longitudinal axis;
a vibration assembly comprising:
a battery at least partially enclosed within the first cavity;
a charging port in electric communication with the battery such that the battery can be recharged without being removed from the first cavity;
a motor at least partially enclosed within the second cavity, the motor being in electric communication with the battery; and
an eccentric weight at least partially enclosed within the second cavity, the eccentric weight being rotatable by the motor about the longitudinal axis, wherein the eccentric weight has a center of mass that is radially offset from the axis of the handle;
a base member configured to support the weight bar while the weight bar is not being used in a strength training exercise, the base member having a charging plug that is configured to mate with the charging port when the weight bar is resting on the base member such that the battery can be recharged while the weight bar rests on the base member.
18. The exercise weight bar of claim 17 wherein the handle further comprising a first weight plate mount and a second weight plate mount.
19. The exercise weight bar of claim 18 wherein the first and second weight plate mounts can receive one or more weight plates.
20. The exercise weight bar of claim 17 wherein at least a portion of the surface of the handle comprises a slip resistant grip.

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