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(54) **SURFACE MOUNTED MODULAR EXERCISE DEVICE**

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(60) Provisional application No. 62/008,701, filed on Jun. 6, 2014.

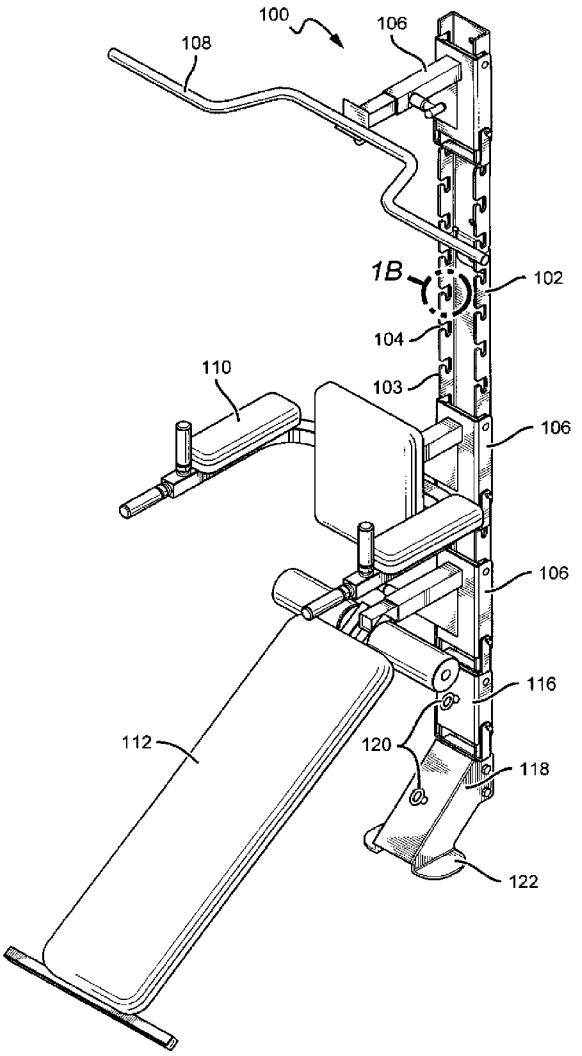
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(57) **ABSTRACT**

Described herein are devices and methods which incorporate a surface mounted "base structure" for use with one or more components allowing various resistance-based exercises to be performed, for example, exercises incorporating bars, benches, handles and resistance bands. The device can be made modular such that an intermediate structure can interchangeably cooperate with various components allowing a myriad of different exercises to be performed, utilizing the same single intermediate structure. The device can comprise additional designs and features to enhance the safety and stability of the device and the connections of the various components to the device.



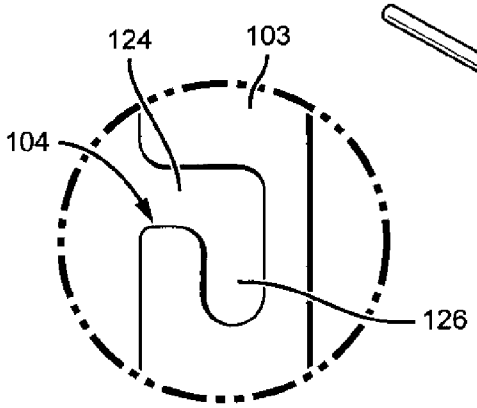

124
103
104
126

FIG. 1B

100
106
108
1B
102
104
110
103
106
106
116
112
120
118
122

FIG. 1A

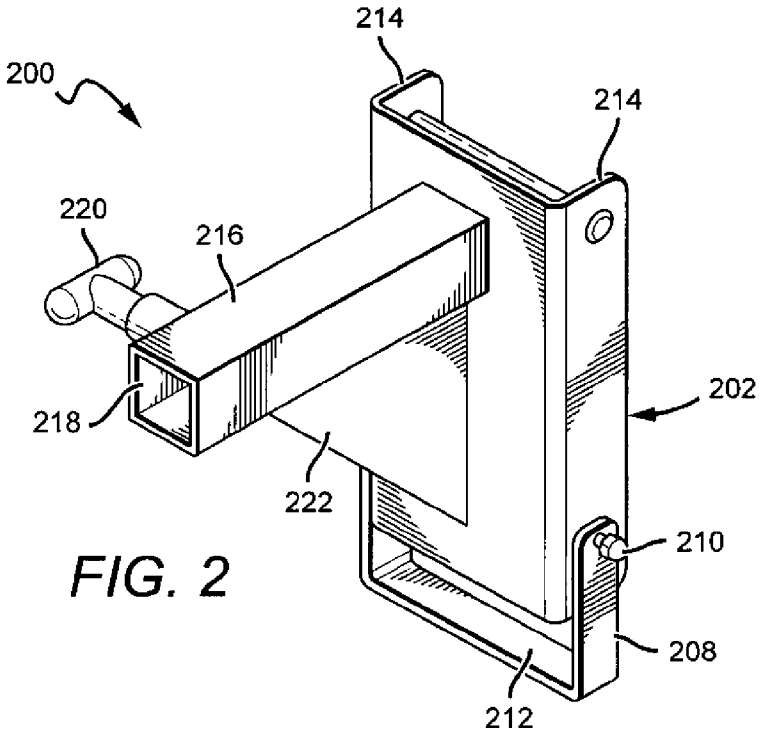
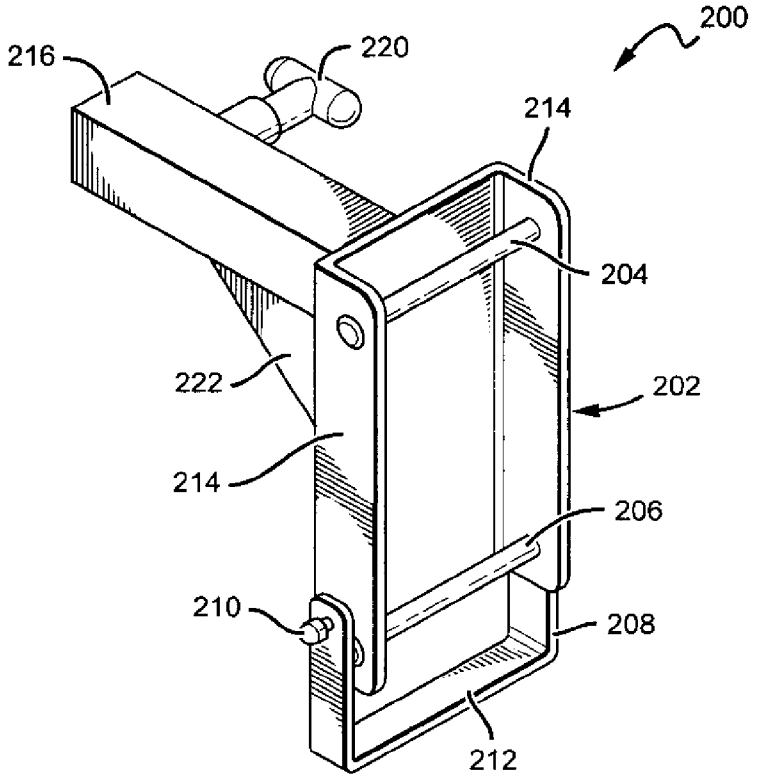

200
214
214
220
216
218
222
202
210
208
212

FIG. 2

FIG. 3


200
216
220
214
204
222
202
214
206
210
208
212

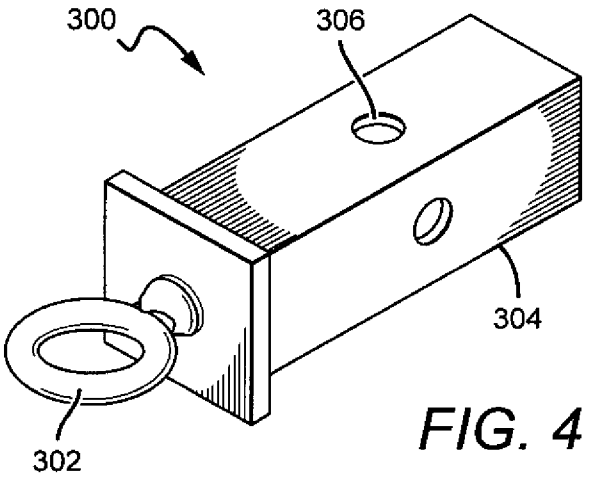


FIG. 4

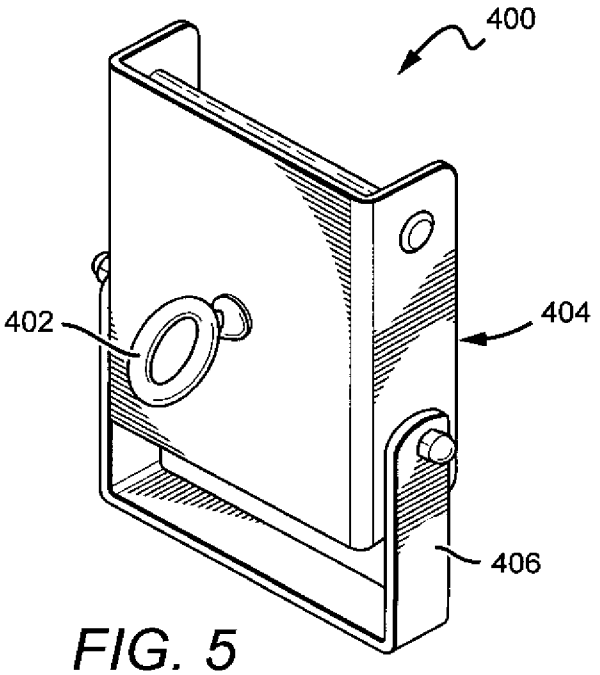


FIG. 5

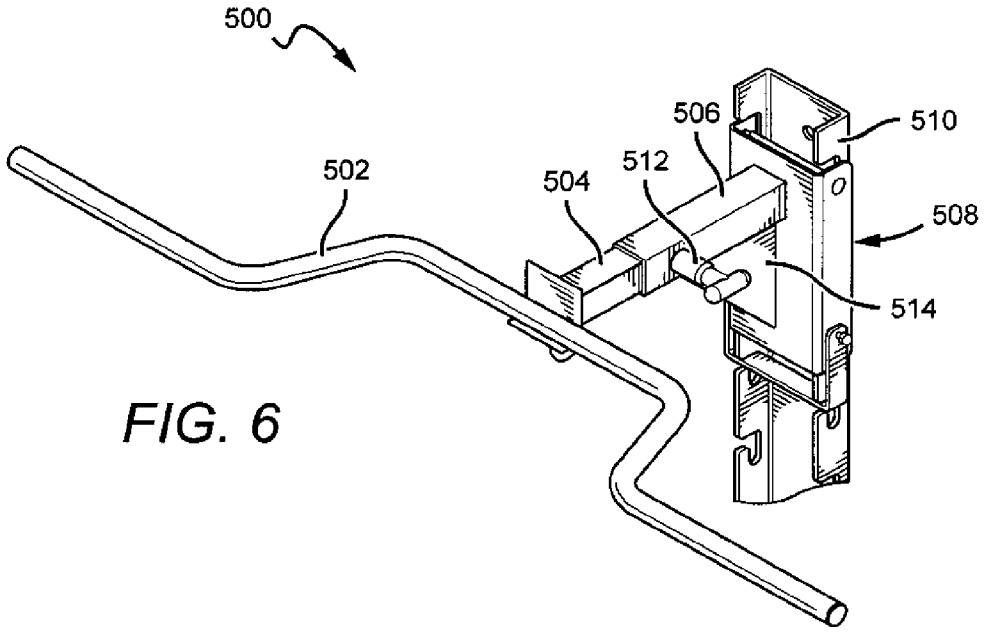


FIG. 6

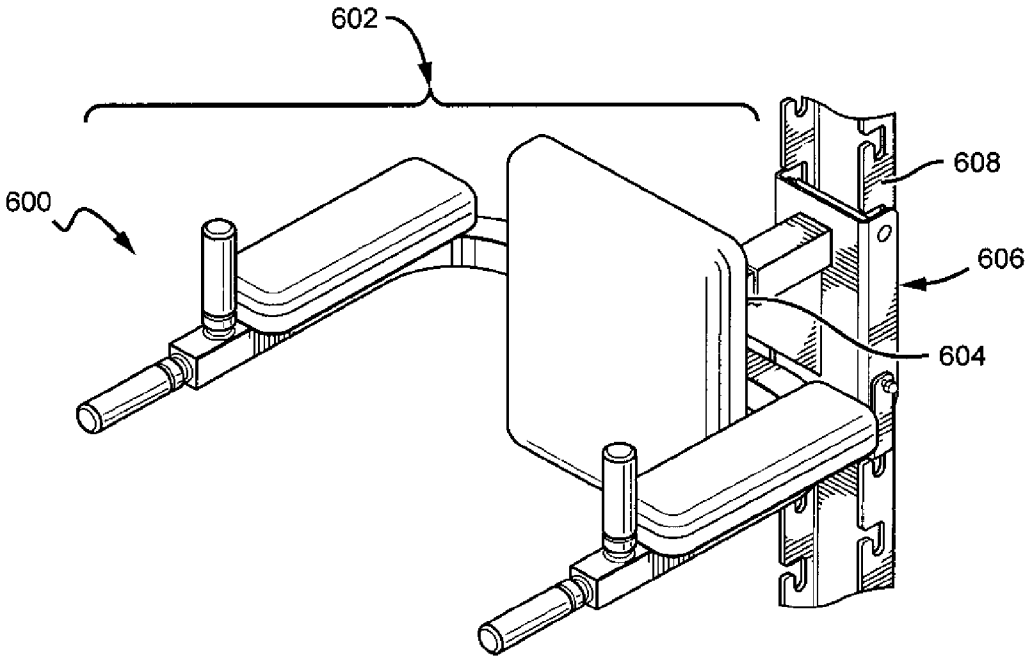


FIG. 7

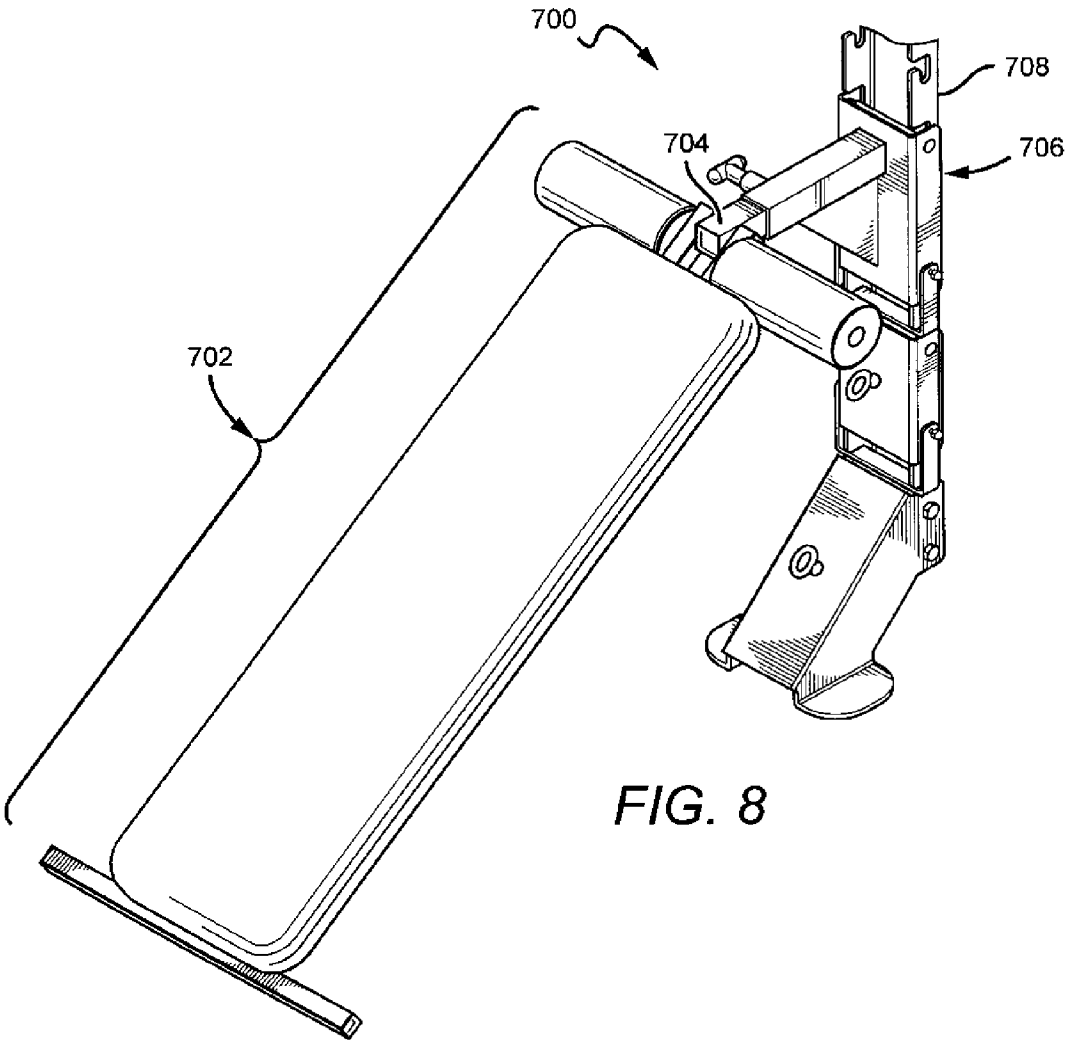


FIG. 8

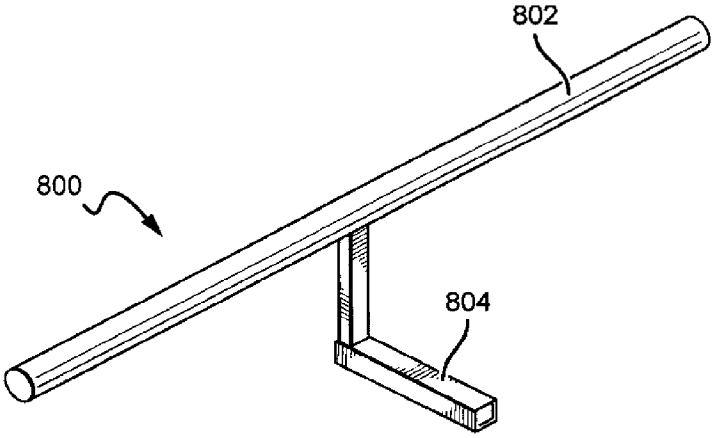


FIG. 9

SURFACE MOUNTED MODULAR EXERCISE DEVICE

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation-in-part of, and claims the benefit of, U.S. Design application Ser. No. 29/493,144 to Trever Gregory, entitled SURFACE MOUNTED MODULAR EXERCISE DEVICE and filed on Jun. 5, 2014. This application also claims the benefit of U.S. Provisional Application Ser. No. 62/008,701 to Trever Gregory, also entitled SURFACE MOUNTED MODULAR EXERCISE DEVICE. Both of these applications are hereby incorporated herein in their entirety by reference.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] Described herein are devices and methods relating generally to exercise and fitness and specifically to surface mounted exercise devices that can include modular components.

[0004] 2. Description of the Related Art

[0005] Throughout human history, the maintenance of proper health through exercise has been of utmost importance. From ancient athletes training for the Olympic games, to modern working individuals packed into gyms in early hours of the morning, humankind has always understood the importance of fitness. Recently, with advances in science and technology, many serious illnesses have been traced back to lack of exercise and related conditions such as obesity. Now more than ever, people are health-conscience and looking for the most cutting edge and efficient exercise equipment and routines.

[0006] One problem in common with most modern exercise equipment is that the equipment is large, obtrusive and bulky. This equipment takes up space in a gym, that a gym owner would much rather use to house additional equipment or free space. Furthermore, individuals building up a "home gym" typically have even less free space to accommodate bulky equipment. Furthermore, each exercise machine typically only allows the user to perform a small number of exercises. Even machines that allow multiple exercises are bulky and typically consist of complex pulley systems, for example, such as those set forth in U.S. Pat. No. 7,798,946 to Dalebout, et al.

SUMMARY OF THE INVENTION

[0007] Embodiments incorporating features of the present invention include devices and methods which incorporate a surface mounted "base structure" for use with one or more components allowing various resistance-based exercises to be performed, for example, exercises incorporating bars, benches, handles and resistance bands. The device can be made modular such that an intermediate structure can interchangeably cooperate with various components allowing a myriad of different exercises to be performed, utilizing the same single intermediate structure.

[0008] The base structure can be connected to a surface such as a wall. A particular exercise element, such as a resistance band attachment or a chin-up bar, can be connected to the base structure with other elements, such as a bench, being put away when not in use. This allows for an easily adjustable all-in-one exercise experience while taking up a minimum amount of space. The device comprises very few "moving parts" and is thus also very stable and less likely to malfunction than complex "weight and pulley" systems.

[0009] Devices incorporating features of the present invention also include various adaptations improving the safety and stability of the device. These aforementioned methods and devices thus provide a convenient, streamlined exercise device capable of targeting a wide variety of muscle groups while conserving space while minimizing preparation and set-up time.

[0010] In one embodiment, an exercise device comprises a base structure, an intermediate structure configured to connect to the base structure, with the intermediate structure configured to accept a modular connection portion that is connected to an exercise element.

[0011] In another embodiment, an exercise device comprises a base structure comprising one or more grooves, with at least one of the grooves comprising a substantially horizontal channel and a substantially vertical portion, with the grooves configured to connect to a modular connection portion connected to an exercise element.

[0012] In still another embodiment, an exercise device comprises a substantially linear base structure configured to connect to a substantially vertical surface, a plurality of grooves in the substantially linear base structure, with the grooves comprising a substantially "L" shape comprising a substantially horizontal channel and a substantially vertical portion, and one or more intermediate structures, with the one or more intermediate structures configured to accept a modular connection portion connected to an exercise element.

[0013] These and other further features and advantages of the invention would be apparent to those skilled in the art from the following detailed description, taken together with the accompanying drawings, wherein like numerals designate corresponding parts in the figures, in which:

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] FIG. **1**A is front perspective view of an embodiment of an exercise device incorporating features of the present invention;

[0015] FIG. **1**B is an expanded side view of a notch and groove structure shown in FIG. **1**A;

[0016] FIG. **2** is front perspective view of an embodiment of a universal bracket element of an exercise device incorporating features of the present invention;

[0017] FIG. **3** is back perspective view of the universal bracket element of FIG. **2**;

[0018] FIG. **4** is front perspective view of an embodiment of a resistance band component for use with a universal bracket element of an exercise device incorporating features of the present invention;

[0019] FIG. **5** is front perspective view of an embodiment of a resistance band component for use with an exercise device incorporating features of the present invention, not utilizing a universal bracket;

[0020] FIG. **6** is front perspective view of an embodiment of a pull-up bar component for use with a universal bracket element of an exercise device incorporating features of the present invention;

[0021] FIG. **7** is front perspective view of an embodiment of a dip/ab bar component for use with a universal bracket element of an exercise device incorporating features of the present invention;

[0022] FIG. **8** is front perspective view of an embodiment of a bench component for use with a universal bracket element of an exercise device incorporating features of the present invention and

[0023] FIG. **9** is front perspective view of an embodiment of a ballet barre component for use with a universal bracket element of an exercise device incorporating features of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0024] The present disclosure will now set forth detailed descriptions of various embodiments. These embodiments comprise various features allowing for a streamlined, space-efficient and convenient exercise system. Devices incorporating features of the present invention comprise a base structure to which various exercise elements, for example, chin-up bars and benches, can be connected in a modular and interchangeable fashion. In some embodiments, the exercise components can be connected to the device through a temporarily or permanently connected intermediate structure. This allows for one intermediate structure, which can be easily positioned, to allow for readily interchangeable components, allowing a user to easily switch exercises without a complex and difficult disassembly and reassembly process of modular components to the base structure.

[0025] Throughout this description, the preferred embodiment and examples illustrated should be considered as exemplars, rather than as limitations on the present invention. As used herein, the term "invention," "device," "method," "present invention," "present device" or "present method" refers to any one of the embodiments of the invention described herein, and any equivalents. Furthermore, reference to various feature(s) of the "invention," "device," "method," "present invention," "present device" or "present method" throughout this document does not mean that all claimed embodiments or methods must include the referenced feature(s).

[0026] It is also understood that when an element or feature is referred to as being "on" or "adjacent" to another element or feature, it can be directly on or adjacent the other element or feature or intervening elements or features may also be present. It is also understood that when an element is referred to as being "connected" or "coupled" to another element, it can be directly connected or coupled to the other element or intervening elements may be present. In contrast, when an element is referred to as being "directly connected" or "directly coupled" to another element, there are no intervening elements present.

[0027] Relative terms such as "outer", "above", "lower", "below", "horizontal," "vertical" and similar terms, may be used herein to describe a relationship of one feature to another. It is understood that these terms are intended to encompass different orientations in addition to the orientation depicted in the figures.

[0028] It is understood that when a first element is referred to as being "between," "sandwiched," or "sandwiched between," two or more other elements, the first element can be directly between the two or more other elements or intervening elements also be present between the two or more other elements. For example, if a first layer is "between" or "sandwiched between" a second and third layer, the first layer can be directly between the second and third layers with no intervening elements or the first layer can be adjacent to one or more additional layers with the first layer and these additional layers all between the second and third layers.

[0029] Although the terms first, second, etc. may be used herein to describe various elements or components, these elements or components should not be limited by these terms. These terms are only used to distinguish one element or component from another element or component. Thus, a first element or component discussed below could be termed a second element or component without departing from the teachings of the present invention. As used herein, the term "and/or" includes any and all combinations of one or more of the associated list items.

[0030] The terminology used herein is for describing particular embodiments only and is not intended to be limiting of the invention. As used herein, the singular forms "a," "an," and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise. It will be further understood that the terms "comprises," "comprising," when used herein, specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components, and/or groups thereof.

[0031] FIG. **1**A shows an exercise device **100** comprising a base structure **102**, which can further comprise one or more notches **103**, which help define one or more receiving grooves **104**. The base structure **102** can be configured with one or more intermediate structures **106** (three shown; hereinafter referred to in this application as a "universal bracket"). The base structure **102** can be configured to interact with and connect to various modular elements allowing different exercises to be performed, including but not limited to: resistance band exercises, exercises utilizing a "bar" or other support structure (such as chin-ups, dips and ballet exercises) and benches). In the embodiment shown, these modular elements include a chin-up bar **108**, a dip/ab bar **110** and a bench structure **112**.

[0032] In some embodiments, the universal bracket **106** is not utilized and a modular element can be directly connected to the base element **102**, for example, a resistance band attachment roughly parallel to base element **102**, such as flat resistance band receiver **116**. In other embodiments, a directly attached modular element can include an angled resistance band receiver **118** that can allow a resistance band to be readily extended in a more angled direction. These directly attached modular attachments allow a resistance band to be attached to a resistance band receiving component **120**, for example, a looped structure as shown, which allows the resistance band to be easily connected and removed as desired while still providing a sturdy environment while the resistance band is in use.

[0033] The universal bracket **106** and/or directly connected modular elements can be configured such that they can move in relation to the base structure **102**, allowing exercises to be performed at a variety of different heights and/or angles. In some embodiments, a universal bracket **106** or connected element can be configured with the base structure **102** in a "tack-like" manner in which portions of the element can slide up and down a linear base structure **102**.

[0034] Base structure **102** can be any shape that would allow connection to a wall, ceiling, floor or other surface, including but not limited to any circular or elliptical shape or any regular or irregular polygon. In some embodiments, such as the embodiment shown, the base structure **102** can be

substantially linear. This substantially linear shape allows for conservation of space, easily adjustable angles for connected modular elements, and more secure connection to certain surfaces, for example, substantially flat surfaces. In the embodiment shown, the base element **102** comprises a substantially linear shape similar to an elongated letter "U." The base structure **102** can connect to a surface utilizing any surface-connection method that is known in the art.

[0035] In some embodiments, the base structure **102** can be connected to one or more substantially vertical surfaces, such as one or more walls, without being connected to another horizontal surface such as a floor or ceiling. The base structure **102** can be connected to surface along its length one or more points, for example, utilizing any connection elements that are known in the art, including but not limited to various anchors, nuts, bolts, nails and screws. In some embodiments, the base structure **102** is connected to the surface at select points along its length to maximize stability. In some embodiments, the base structure **102** can be connected to a sturdy portion of a wall, for example, a wall-stud or other reinforced portion. In other embodiments, a separate base plate (not shown) can be installed into a surface and the base structure **102** can be connected to the base plate. The base plate can serve to further dissipate force applied to the surface by a user utilizing the exercise device **100**. In some wall-mounted embodiments, the base structure **102** can have a bottom portion resting on the floor to help reduce the force of the system on the attached wall.

[0036] In some embodiments, the base structure **102** can be further connected to a horizontal surface to provide additional stability and support. In some embodiments, this further support connection can be provided via a modular exercise attachment, for example, in embodiments utilizing a bottom angled resistance band receiver **118**, the element **118** can further comprise a floor attachment portion **122**, which can be used to connect the base structure **102** to the floor via the angled resistance band receiver **118**. In this embodiment, it can be useful to make angled resistance band receiver **118** permanent rather than removable and modular, in order to provide more stability and support. While FIG. **1**A shows only a bottom support portion, it is understood that a similar structure can be used to connect the base structure **102** to a ceiling applying the present disclosure regarding the floor mutatis mutandis to a ceiling connection.

[0037] The base structure **102** can be made of any suitable material that would allow the exercise device **100** to function properly, with the preferable material being a sturdy material that can support weight and stress. Some suitable materials include, but are not limited to: metals, plastics, resins, wood and various sturdy polymers such as Poly(vinyl chloride) ("PVC"). The base structure **102** can be formed and shaped utilizing any suitable method for forming structures known in the art, including but not limited to: machining, etching, chemical and laser treatment, molding, and extrusion.

[0038] The base structure **102** can further comprise notches **103** and receiving grooves **104**, which can assist, facilitate and/or enable connection, both direct and/or via an intermediate structure such as a universal bracket **106**, of a modular exercise element to the base structure **102**. The notches and grooves can be any shape that can facilitate secure and/or easy connection of a modular exercise element to the base structure **102**, including but not limited to any circular or elliptical shape or regular or irregular polygon.

[0039] In the embodiment shown in FIG. **1**A, the notches are roughly "L" shaped, resulting in grooves that are roughly gamma or reverse-gamma shaped. This is shown more clearly in FIG. **1**B, which more clearly demonstrates how the notches **103** and receiving grooves **104** can more securely hold a connected element, allowing connection by placing a connection portion of an element through a substantially horizontal channel **124** of the receiving groove **104** and allowing the connection portion to utilize gravity and come to rest in the substantially vertical portion **126** of the receiving groove **104**.

[0040] The base structure **102** can be configured with a surface in a variety of different ways to improve system function and stability with the exertion of multiple force vertices being considered. Beyond the forces considered with the connection of the modular elements, the base structure **102** can be configured to reduce any forces generated by a user utilizing a modular exercise component. Due to the base structure's **102** connection to a surface, most forces applied to a connected modular component will be partially redirected into the surface, rather than pulling down and outward. This positioning can be accomplished by the positioning axles on the base structure **102** relative to where weight or force will be applied. The dissipation of down & outward forces by redirecting them into a surface can help minimize the risk of the system unintentionally disconnecting from the affixed surface.

[0041] FIGS. **2** and **3** show one embodiment of a possible universal bracket **200**, similar to the universal brackets **106** shown in FIG. **1**A. Universal bracket **200** can be made of similar materials as those listed above for the base structure **102** in FIG. **1**A, but the universal bracket **200** need not be made of the same material as the base structure. The universal bracket **200** comprises a body portion **202**, which in turn comprises one or more connection elements **204**, **206** (two shown). The connection elements **204**, **206** can be configured to connect to the universal bracket **200** to a base structure **102** (as shown in FIG. **1**A), for example, by inserting the connection elements **204**, **206**, through the substantially horizontal **124** and vertical **126** channels of a grooved structure (as is shown in FIG. **1**B). By designing the dimensions of the universal bracket to correlate with a corresponding notch and groove structure, simple gravity and spacing allows the connection elements **204**, **206** to rest comfortably in a groove such that body portion **202** does not substantially move in relation to a connected base element.

[0042] The universal bracket **200** can further comprise additional features to improve device stability and security and to prevent and/or hinder movement of body portion **202**. For example, the universal bracket **202** can further comprise one or more safety components such as safety latches **208**, which can be moveably positioned in a desired location in relation to the device, for example, in another groove of the device, to further prevent movement of body portion **202**. For example, in the embodiment shown, safety latch **208** can be rotated about an axis **210** so that the lower portion **212** of the latch can securely rest in a lower groove of a base structure (such as base structure **102** in FIG. **1**A). This further helps prevent upward movement of universal bracket **200** due to a user applying directional forces. Another safety feature is that body portion **202** can comprise lipped side portions **214** that can be configured to fit comfortably around a base structure to prevent further movement.

[0043] The universal bracket **200** further comprises a bracket connection element **216**, which can be configured to

interact or mate with a corresponding structure on a modular exercise element to connect the modular element to the universal bracket **200**. The bracket connection element **216** can be any type of connection, for example, interchangeable connection, that is known in the art, for example a male-female connection or any other connection utilizing a lock-and-key or corresponding structures. In the embodiment shown, the bracket connection element **216** comprises a receiving portion **218**, which can be configured to receive a corresponding structure. Example corresponding structures will be set forth in further detail below. The universal bracket **200** can further comprise a lock structure **220**, which can further secure a corresponding structure on a modular element to the bracket connection element **216** (this will be discussed in more detail further below).

[0044] The universal bracket **200** can further comprise a support structure **222**, which can provide additional support to the universal bracket **200** against force applied by a user. Any additional structure that can help to redirect or otherwise dissipate force can be used. In the embodiments shown, the support structure **222** is a support beam angled to provide additional support against pulling forces, especially downward forces, applied to the universal bracket **200**.

[0045] FIG. **4** shows an example modular exercise element **300** that can be utilized in conjunction with the universal bracket **200** shown in FIGS. **2-3**. This particular modular exercise element **300** is for use with resistance-band-based exercises and comprises a resistance band receiving component **302**, similar to resistance band receiving component **120** in FIG. **1**A above. The modular exercise element **300** further comprises a modular element connection portion **304**, which can be configured to interact or mate with a corresponding structure on a universal bracket such as bracket connection element **216** in FIGS. **2-3** above.

[0046] In the embodiment shown, the modular element connection portion **304** can be configured to slide into or over a corresponding bracket connection element. The modular element connection portion **304** can also further comprise holes **306** which can line up with corresponding holes on the bracket connection element and can interact with a locking mechanism (such as lock structure **220** in FIGS. **2-3** above) to further secure the two connection elements together.

[0047] The holes **306** can be arranged on each side of the modular element connection portion **304**, so that the resistance band receiving component **302** can be secured and orientated in a variety of positions. Alternatively or in addition, the resistance band receiving component **302** can be made rotatable in relation to the modular element connection portion **304**. It is also understood that while the figures depict the resistance band receiving component **302** as a loop structures, various other structures known in the art for use with resistance bands can be utilized.

[0048] FIG. **5** shows a modular exercise element **400** configured for direct connection to the base structure and not utilizing a universal bracket. This modular exercise element **400** comprises a resistance band receiving component **402**, a body **404** and an optional safety latch **406**. The body **409** and safety latch **406** function similarly to the body **202** and safety latch **208** of the universal bracket **200** in FIGS. **2-3**. Modular exercise element **400** can be used as a modular component and can be connectable and detachable to a base structure by utilizing connection elements, such as the connection elements **204**, **206** in FIGS. **2-3**. Alternatively, modular exercise element **400** can be permanently connected to a base structure. While this embodiment shows a direct connection configuration for a resistance band, it is understood that a similar structure can be used

[0049] FIGS. **6-9** show various example modular elements that can be utilized with a universal bracket in a manner similar to modular exercise element **300** in FIG. **4**. As the actual exercise components themselves (although not their connections, support structures etc.), for example, a chin-up bar, dip/ab bar, bench, and ballet barre, are generally known in the art, these embodiments are only briefly described herein. FIG. **6** shows a chin-up bar modular element **500**, comprising a chin-up bar **502** and modular element connection portion **504**, shown mating with a corresponding bracket connection element **506** of a universal bracket **508**, which is connected to a base structure **510**. These connections have been discussed in detail above. This view illustrates how a locking mechanism **512** can connect modular element connection portion **504** with corresponding bracket connection element **506** by being placed as a peg structure between corresponding holes (not shown). This view also shows how a support structure **514**, similar to support structure **222** in FIGS. **2-3** above, can be angled to dissipate the downward force applied during performing a chin-up exercise.

[0050] FIG. **7** shows a dip/ab bar modular element **600**, comprising a dip/ab bar setup **602** and modular element connection portion **604**, which can connect to a universal bracket **606**, which is connected to a base structure **608**. FIG. **8** shows a bench modular element **700**, comprising a bench setup **702** and modular element connection portion **704**, which can connect to a universal bracket **706**, which is connected to a base structure **708**. FIG. **9** shows a ballet barre modular element **800**, comprising a ballet barre setup **802** and modular element connection portion **804**, which can connect to a universal bracket. The connection structure set forth in FIGS. **7-9** have already been discussed in detail above.

[0051] Although the present invention has been described in detail with reference to certain preferred configurations thereof, other versions are possible. Embodiments of the present invention can comprise any combination of compatible features shown in the various figures, and these embodiments should not be limited to those expressly illustrated and discussed. Therefore, the spirit and scope of the invention should not be limited to the versions described above.

[0052] The foregoing is intended to cover all modifications and alternative constructions falling within the spirit and scope of the invention as expressed in the appended claims, wherein no portion of the disclosure is intended, expressly or implicitly, to be dedicated to the public domain if not set forth in the claims.

I claim:

1. An exercise device, comprising:

a base structure; and

an intermediate structure configured to connect to said base structure, said intermediate structure configured to accept a modular connection portion, said modular connection portion connected to an exercise element.

2. The exercise device of claim **1**, wherein said base structure is substantially linear.

3. The exercise device of claim **1**, wherein said base structure is configured to connect to a substantially vertical surface.

4. The exercise device of claim **1**, wherein said exercise element is selected from the group consisting of a resistance band connecting structure, a chin-up bar, dip/ab bar, a bench, and a ballet barre.

5. The exercise device of claim **1**, wherein said intermediate structure further comprises a safety component connected to said intermediate structure, said safety component configured to secure said intermediate structure to said base structure.

6. The exercise device of claim **5**, wherein said safety component comprises a safety latch configured to rotate about an axis.

7. The exercise device of claim **1**, wherein said intermediate structure further comprises a support structure configured to provide mechanical support to a point at which said modular connection portion connects to said intermediate structure.

8. The exercise device of claim **1**, wherein said base structure comprises one or more grooves and said intermediate structure comprises one or more connection structures configured to connect to said one or more grooves.

9. The exercise device of claim **8**, wherein said intermediate structure is held in place by gravity when connected to said base structure.

10. The exercise device of claim **1** wherein said intermediate structure is moveable with respect to said base structure.

11. An exercise device, comprising:

a base structure, said base structure comprising one or more grooves, wherein at least one of said one or more grooves comprise a substantially horizontal channel and a substantially vertical portion, said one or more grooves configured to connect to a modular connection portion, said modular connection portion connected to an exercise element.

12. The exercise device of claim **11**, wherein said base structure is substantially linear.

13. The exercise device of claim **11**, wherein said base structure is configured to connect to a substantially vertical surface.

14. The exercise device of claim **11**, wherein said exercise element is selected from the group consisting of a resistance band connecting structure, a chin-up bar, dip/ab bar, a bench, and a ballet barre.

15. The exercise device of claim **11**, wherein said modular connection portion further comprises a safety latch configured to rotate about an axis.

16. The exercise device of claim **15**, wherein said safety latch is configured such that it can be positioned in one or more of said one or more grooves.

17. The exercise device of claim **11**, wherein said modular connection portion is held in place by gravity when connected to said base structure.

18. The exercise device of claim **11**, wherein said modular connection portion comprises at least one connection element, said at least one connection element configured to connect to said base portion and rest in said substantially vertical portion of at least one of said one or more grooves.

19. The exercise device of claim **11**, further comprising an intermediate structure configured to connect said modular connection portion to said base structure.

20. An exercise device, comprising:

a substantially linear base structure configured to connect to a substantially vertical surface;

a plurality of grooves in said substantially linear base structure, said grooves comprising a substantially "L" shape comprising a substantially horizontal channel and a substantially vertical portion; and

one or more intermediate structures, said one or more intermediate structures configured to accept a modular connection portion, said modular connection portion connected to an exercise element.

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