In at least one aspect, an exercise assembly includes a horizontal band configured to be fitted around four vertical sides of at least one of a bed mattress or a bed support frame having a resting surface and four vertical sides, and having a length at least equal to a circumference of the four vertical sides of the at least one of the bed mattress or the bed support frame. The exercise assembly also includes a plurality of features on the band spaced about the length of the horizontal band, each of the plurality of features on the band being configured to removably receive an exercise device and a plurality of separate elastic exercise devices, each of the plurality of separate elastic exercise devices having an attachment member configured to removably attach the elastic exercise device to one or more of the plurality of features on the band, at another end, a user interface member.
FIG. 4
BED-MOUNTABLE EXERCISE APPARATUS

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation application of U.S. patent application Ser. No. 13/627,649, titled "Bed-Mountable Exercise Apparatus" and filed on Sep. 26, 2012, and this application further claims the benefit of and priority to U.S. Provisional Application No. 61/539,735, filed Sep. 27, 2011, and U.S. Provisional Application No. 61/581,206, filed Dec. 29, 2011, each of the preceding applications being incorporated by reference in their entireties herein.

TECHNICAL FIELD

[0002] Various exemplary embodiments disclosed herein relate generally to exercise equipment. More specifically, the subject matter relates to portable exercise equipment to be used in conjunction with a bed.

BACKGROUND

[0003] Home exercise is a regular activity practiced by many individuals using various exercise equipment to enable stretching and cardiovascular, weight, and strength training, and can be used for health and rehabilitation. While home exercise has enabled individuals to exercise more consistently and with greater frequency, a continuing restraint to many individuals has been the space requirements associated with home exercise equipment. Individuals who occupy small or crowded spaces, such as hospitals, apartments, retirement homes, and nursing homes, may not have proper room to conduct exercises correctly without risking injury.

[0004] In view of the foregoing, it would be desirable to have exercise equipment that does not require significant additional space inside a home. Specifically, it would be highly desirable to have exercise equipment that used existing elements found in homes.

SUMMARY

[0005] A brief summary of various exemplary embodiments is presented. Some simplifications and omissions may be made in the following summary, which is intended to highlight and introduce some aspects of the various exemplary embodiments, but not to limit the scope of the invention. Detailed descriptions of a preferred exemplary embodiment adequate to allow those of ordinary skill in the art to make and use the inventive concepts will follow in the later sections.

[0006] Various embodiments may relate to an exercise equipment assembly to be used with a bed assembly. The exercise equipment assembly allows the attachment of one or more exercise bands to enable users to perform various body weight exercises both on and around the bed assembly. Various embodiments relate to an exercise bed assembly comprising a bed comprising a mattress, with or without a support frame, and an exercise assembly fitted around the circumference of the mattress, around the circumference of the support frame, or around both the mattress and the support frame. Various embodiments include an exercise assembly comprising a horizontal band having a length at least equal to the circumference of the bed and/or the support frame. Some embodiments include a reinforcement piece connected to the horizontal band, wherein the reinforcement piece extends from a first connection point on the horizontal band under the mattress to a second connection point opposite the first connection point.

[0007] In other examples, any of the aspects above can include one or more of the following features. In some embodiments, the exercise bed assembly can further include at least one exercise loop connected to the horizontal band. In some embodiments, the exercise bed assembly includes at least one hole in the horizontal band. This hole can be supported with a grommet. In some embodiments, the reinforcement piece of the exercise bed assembly comprises at least one reinforcement strap. In some embodiments, the horizontal bed assembly further comprises a fastening means, such as a buckle and catch, or a hook-and-loop fastener (e.g., a Velcro® brand hook and loop fasteners), at each end of the horizontal band.

[0008] It should be apparent that, in this manner, various exemplary embodiments enable the use of existing elements of a home to form an exercise assembly. Particularly, by enabling the use of a bed assembly, a user can construct an exercise assembly without using a significant amount of additional space inside a room.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] In order to better understand various exemplary embodiments, reference is made to accompanying drawings, wherein:

[0010] FIG. 1A illustrates an exemplary bed assembly;

[0011] FIG. 1B illustrates another view of an exemplary bed assembly;

[0012] FIG. 2A illustrates another exemplary bed assembly;

[0013] FIG. 2B illustrates an exemplary single-ended exercise bed assembly;

[0014] FIG. 3 illustrates a side view of an exemplary bed assembly;

[0015] FIG. 4 illustrates another exemplary bed assembly;

[0016] FIG. 5 illustrates another exemplary bed assembly;

[0017] FIG. 6 illustrates a side view of another exemplary bed assembly;

[0018] FIG. 7A illustrates another exemplary bed assembly; and

[0019] FIG. 7B illustrates an exemplary single-ended restraint band.

DETAILED DESCRIPTION

[0020] FIG. 1A shows an exemplary bed assembly 100, including a mattress 10, a support frame 20, reinforcement straps 30, buckles 40, and a horizontal band 50 that includes exercise loops 52. In exemplary embodiments, the exercise assembly includes the horizontal band 50 along with a series of reinforcement straps 30 and buckles 40. In some embodiments, exercise bands (not shown) can hook onto or loop around the exercise loops 52.

[0021] The mattress 10 can be, for example, a mattress of a standard size, such as a twin, twin extra long, full, queen, king, and California king mattress sizes. In some embodiments, the bed assembly 100 can include the mattress 10 without the support frame 20 (e.g., when the mattress is supported by the floor). The support frame 20 can be, for example, a frame with support beams or slats, or a spring box (i.e., "box spring") that supports the mattress. In some embodiments, the exercise assembly can be placed between
the mattress 10 and the support frame 20, as illustrated in the bed assembly 100. In other embodiments, the exercise assembly can be placed between the support frame 20 and the floor (not shown). In the embodiment of FIG. 1A, as well as all subsequent embodiments described herein, and other embodiments that one of skill in the art may contemplate based on the embodiments disclosed herein, horizontal band 50 of the exercise assembly can wrap around the circumference of either the mattress 10, or the support frame 20, or both the mattress 10 and the support frame 20 (e.g., the horizontal band 50 can be wide enough to wrap both the mattress 10 and support frame 20 or the horizontal band 50 can be in the form of a dual horizontal band system for purposes of enabling exercise loops to be provided at different heights from the floor).

[0022] The exercise assembly can include the horizontal band 50, reinforcement straps 30, and buckles 40. In the embodiment of FIG. 1A, as well as all subsequent embodiments described herein, and other embodiments that one of skill in the art may contemplate based on the embodiments disclosed herein, the exercise assembly can include the horizontal band 50 with or without any reinforcement straps 30 or buckles 40. The horizontal band 50 can be a support band made of a strong material, such as elastic, woven nylon, or such other applicable materials that would be known to a person of skill in the art. The material of the horizontal band 50 can wrap around the circumference of the mattress 10 and/or support frame 20. In some embodiments, the horizontal band 50 can be of the same length as the circumference of the mattress 10 and/or support frame 20 (e.g., the circumference of a twin, twin extra long, full, queen, king, or California king-sized mattress or support frame). When the horizontal band 50 has the same length as the circumference of the mattress 10 and/or support frame 20, the horizontal band 50 can be made of a material like elastic to enable a user to place the horizontal band 50 around the circumference of the mattress 10 and/or support frame 20. The length of the horizontal band 50 can be sized to be equal to a standard mattress size and/or corresponding support frame), such as twin, twin extra long, full, queen, king, and California king. In such instances, the horizontal band 50 fits snugly against the mattress 10 and/or support frame 20 with sufficient force to remain in place around the mattress 10 and/or support frame 20 when the user exerts force on the horizontal band 50 via exercise bands or other attached exercise equipment.

[0021] In some embodiments, the length of the horizontal band 50 can be longer than the circumference of the mattress 10 and/or support frame 20 when wrapped around said mattress 10 and/or support frame 20. In such instances, a single horizontal band 50 can be used for multiple standard bed sizes (and their corresponding support frames), including, twin, twin extra long, full, queen, king, and California king. In these embodiments, the horizontal band 50 can also have fastening means at its ends to ensure that the horizontal band 50 remains in place around the mattress 10 and/or support frame 20 when the user exerts force on the horizontal band 50 via exercise bands or other attached exercise equipment. For example, the horizontal band 50 can include a buckle and catch (not shown) through which the user tightens the horizontal band 50 once placed around the width of the mattress 10 and/or support frame 20. The horizontal band 50 can also include other fastening means, such as a clasp, buckle trim, hook-and-loop fastener, or similar means familiar to those of skill in the art to ensure the horizontal band 50 remains around the circumference of the mattress 10 or the support frame 20.

[0024] The horizontal band 50 can also include exercise loops 52. In some embodiments, the exercise loops 52 continuously line the length of the horizontal band 50. In some embodiments, the exercise loops 52 are spaced apart in groups to allow the reinforcement straps 30 to loop around the horizontal band 50 without covering the exercise loops 52. In some embodiments, the exercise loops 52 can have different widths. In such instances, the user can, for example, use exercise bands of different thicknesses or use connectors of varying thickness by attaching the exercise band or connector to an exercise loop 52 of the proper width. In some embodiments, the exercise band can be looped around a section of the entire horizontal band 50. In some embodiments, the exercise loops 52 are made of the same material as the horizontal band 50, such as elastic or nylon. In some embodiments, the exercise loops 52 are sewn onto the horizontal band 50. In some embodiments, the horizontal band 50 can include other attachment points for the exercise band 60. For example, the horizontal band can include other connectors (not shown), including, for example, O-rings, D-rings, carabiners, or other connectors known to a person of skill in the art. For example, in some embodiments, the horizontal band 50 can include connectors made of the same material as the connectors 63, 65 used in the exercise band.

[0025] FIG. 1B illustrates another view of the exemplary bed assembly. FIG. 1B illustrates the underside of the mattress 10, including a series of parallel reinforcement straps 30 that extend across the width of the mattress 10 and a series of parallel reinforcement straps 30' that extend across the length of the mattress 10. The reinforcement straps 30, 30' can be made of the same material as the horizontal band 50, including materials like elastic and nylon. In some embodiments, the reinforcement straps can be made of a stronger, less flexible material than the horizontal band 50, such as nylon webbing, ballistic nylon, and similar materials used for strength. The reinforcement straps 30, 30' can be attached to the horizontal band 50 at two different locations. For example, a widthwise reinforcement strap 30 can be attached at a first location on the horizontal band 50, extend below the mattress 10, and be attached at a second location on the horizontal band 50 at the opposite side of the mattress 10. Likewise, a lengthwise reinforcement strap 30' can be attached at a first location on horizontal band 50, extend below the mattress 10, and be attached at a second location on the horizontal band 50 at the opposite side of the mattress 10. In some embodiments, the reinforcement straps 30, 30' extend between the mattress 10 and the support frame 20. In other embodiments, the reinforcement straps 30, 30' extend below the support frame 20.

[0026] In some embodiments, the lattice created by the parallel reinforcement straps 30, 30' can be created by the user when weaving the individual reinforcement straps 30, 30' through each other. In some embodiments, the reinforcement straps 30, 30' can be sewn into a pattern, such as the lattice illustrated in FIG. 1B. In other embodiments, the lattice can be created from fewer pieces of material. For example, in some embodiments, the lattice can be created from a single piece of material. Other methods of creating the lattice and similar patterns are known to a person of skill in the art.

[0027] In some embodiments, the reinforcement straps 30, 30' can also have buckles 40, as illustrated in FIG. 1A. The user may tighten the reinforcement straps 30, 30' through the use of the buckles 40 in order to secure the horizontal band 50
against the mattress 10. In other embodiments, the reinforce- 
ment straps 30, 30' can also have other types of tightening 
means. This can include, for example, other types of buckles 
or hook-and-loop fasteners.

[0028] In some embodiments, the user can first place 
the reinforcement straps 30, 30' under the mattress 10, 
then weave the horizontal band 50 through the ends of the rein- 
forcement straps 30, 30' created by the buckles 40. The user 
can then tighten the horizontal band 50 using the tightening 
means at the end of the horizontal band 50. Once the horizon- 
tal band is tightened, the user can then tighten the reinforce- 
ment straps 30, 30' using the buckles 40. In other embodi- 
ments, the user can first place the horizontal band 50 around 
the mattress 10 before looping the ends of the reinforcement 
straps 30, 30' around locations of the horizontal band 50.

[0029] FIG. 2A illustrates another exemplary bed assembly 200, 
including a mattress 10, a support frame 20, reinforce- 
ment straps 30, horizontal band 50, exercise loops 52, and 
exercise bands 60. The bed assembly 200 is similar to the bed 
assembly 100 of FIG. 1A. In addition, the bed assembly 200 
further has a series of exercise bands 60. The exercise bands 
60 can either be single-ended exercise bands that are attached 
to an exercise loop 52 on the horizontal band 50 through a 
connector, or can be double-ended exercise bands with 
handles on each end, with the exercise band weaved through 
an exercise loop 52. In the illustrative embodiment, for 
example, the reinforcement piece includes reinforcement 
straps 30 that are affixed directly to the horizontal band 50 
(e.g., by sewing) to make its connection. In other embodi- 
ments, the reinforcement straps can be formed as a unitary 
piece, bonded through other methods (e.g., rivets, adhe- 
sive, weaving, etc.) known to a person of skill in the art. This 
can include, for example, other types of buckles or hook-and- 
loop fasteners.

[0030] FIG. 2B illustrates an exemplary single-ended exercise 
band 60, including stretching band 61, connectors 63, 65, 
handle attachment 67, and handle 69. The stretching band 61 
can be made of a material like elastic, rubber, or similar 
stretching material to provide resistance to a user when 
moved during an exercise. In some embodiments, the exercise 
band 60 can be a double ended exercise band. In such 
instances, the stretching band 61 can have no attachments on 
its ends, or handles 69 with handle attachments 67 attached at 
each end. In other embodiments, the exercise band 60 can 
be a single-ended exercise band. In such instances, the exercise 
band 60 can have a connector 65 at one end to connect the 
stretching band to the exercise loop 52. The exercise band 60 
can also have a connector 63 to connect the stretching band 61 
to a handle 69 via a handle attachment 67. In some embodi- 
ments, the connectors 63, 65 and the handle attachment 67 are 
made of the same material, such as a strong metal like steel. 
The connectors 63, 65 and handle attachment 67 can be loops 
with openings like carabiners (with either a spring or a 
screwed gate), where the loop is closed during exercise 
and open to allow attachment or detachment.

[0031] FIG. 3 illustrates a side view of an exemplary bed assembly 300 including horizontal band 50 with reinforce- 
ment straps 32. In the bed assembly 300, the mattress 10 has 
the horizontal band 50 including exercise loops 52 fitted 
around its circumference, while the reinforcement straps 32 
extend below the mattress 10. In the illustrative embodiment, 
the reinforcement straps 32 include one or more adjustment 
loops through which the horizontal band 50 is weaved. The 
adjustment loops on the reinforcement straps 32 allow the 
user to specify the vertical placement of the horizontal 
band 50 around the mattress, and adjust the tension in the reinforce- 
ment straps 32 to fit the mattress, as the user weaves the 
horizontal strap 50 through the loops of the series of rein- 
forcement straps 32. The adjustment loops of the reinforce- 
ment straps 32 along with horizontal band 50 with tightening 
means can be used as an exercise assembly that fits a wide 
range of bed sizes and bed heights.

[0032] FIG. 4 illustrates another exemplary bed assembly 400, 
including a mattress 10, a support frame 20, a horizontal 
band 50 with exercise loops 52, reinforcement straps 30, and 
reinforcement corner straps 34. The bed assembly 400 is 
similar to the bed assembly 100 of FIGS. 1A and 1B. The 
reinforcement straps 30, 34 create a diamond pattern under 
the mattress 10 (shown in FIG. 4 with dotted lines). Rein- 
forcement corner strap 34 is split around the corner of the 
mattress 10, but reforms as a single strap under the mattress 
10, extending diagonally under the mattress 10 to the opposite 
corner. The diamond pattern secures the horizontal band 50 
while using fewer reinforcement straps for support.

[0033] FIG. 5 illustrates another exemplary bed assembly 500, 
including a mattress 10, a support frame 20, and an exercise 
frame 54 with exercise loops 52. In the illustrative 
embodiment, the exercise frame 54 includes the horizontal 
band and a reinforcement sheet connected to the horizontal 
band. The reinforcement sheet can be attached at a first side 
of the horizontal band, extend below the mattress 10, and be 
attached at a second side on the horizontal band at the oppo- 
site side of the mattress 10. In some embodiments, the exercise 
frame 54 can be sized to the dimensions of a standard mattress 
and may be made of a material like elastic to be placed around the mattress 10. In other embodiments, a por- 
tion of the exercise frame 54 (e.g., a corner) can include 
tightening means (not shown) to tighten the sides of the exercise 
frame 54 once placed around the mattress 10. In the 
embodiment of FIG. 5, as well as all other embodiments 
described herein, and further embodiments that one of skill in 
the art may contemplate based on the embodiments disclosed 
herein, the bed assembly can include the exercise frame 54 
with or without a reinforcement sheet, and the exercise frame 
54 may be wrapped around the mattress 10, the support frame 
20, or both the mattress 10 and support frame 20.

[0034] FIG. 6 illustrates a side view of another exemplary bed assembly 600 including horizontal band 50 and holes 56 
with reinforcement grommets 58. In the bed assembly 600, 
the mattress 10 has the horizontal band 50 including holes 56 
fitting around its circumference. In the illustrative embodi- 
ment, holes 56 each include a reinforcement grommet 58. 
This reinforcement grommet 58 can maintain support for the 
hole 56 when either a reinforcement strap 30 (not shown) or 
exercise band 60 is connected to it. The grommet 58 can be 
made of supportive material, such as metal, rubber, or plastic. 
The holes 56 can provide connection points on the horizontal 
band 50, while the grommets 58 can be added to the holes 56 
to prevent tearing or abrasion of the horizontal band 50 in 
locations near the holes 56.

[0035] FIG. 7A illustrates another exemplary bed assembly, 
including a mattress 10, a support frame 20, a horizontal 
band 50 with reinforcement straps 30, holes 56, and support 
grommets 58. The bed assembly also includes single-ended 
restraint bands 60 with cuffs 70 attached to the user on the 
mattress 10. In some embodiments, the holes 56 on the hori- 
zontal band 50 can be replaced with other points of connec- 
tion, such as exercise loops 52 illustrated in FIG. 1.
parison with the bed assembly 200, the bed assembly 700 has been modified with restraint bands 60 that at least partially immobilize a user. In some embodiments, the user may have one or more parts of the body restrained using one or more restraint bands 60 connected to the cuffs 70 fitting the applicable body part. In the illustrative embodiment, for example, the user is restrained at four limbs using four restraint bands 60 with four fitting cuffs 70 to the point that he is effectively immobilized. In other embodiments, the material of restraint bands 60 and/or the length of the restraint bands 60 can be chosen and/or modified to allow the user to have a wider range of motion while restrained by the cuffs 70. In some embodiments, other attachments (not shown) can be attached to the horizontal band 50, for example, through attachment through holes 56 for engagement with the user. For example, other devices can be anchored to the horizontal band 50 to be connected, further constrain, or to further engage the user while the user is restrained.

[0036] FIG. 7B illustrates an exemplary single-ended restraint band 60 that includes flexible band 61, connectors 63, 65, handle attachment 67, and cuff 70. Single-ended restraint band 60 is similar to the single ended exercise band 60 of FIG. 2B, though the restraint band 60 is configured with the primary purpose of at least partially immobilizing the user instead of enabling the user to engage in resistance exercises. For example, the flexible band 61 can be made from a wider range of materials than the stretching band 61, as the flexible band can be made from flexible, non-stretching materials (e.g., leather) and similar materials known to a person of skill in the art. Similarly, the handle 69 of the exercise band 60 in FIG. 2B has been replaced with cuff 70, which fits around the body part of the user. Cuff 70 can be made of material such as cloth, leather, metal, nylon, elastic, or similar material to fit around a body part of the user. Other types of user restraints to be connected to the restraint band 60 will be known to a person of skill in the art. Depending on the preference of the user, the type of cuff 70 can be chosen for the comfort of the user. For example, in some embodiments, the cuffs 70 can be made of a soft material with easier closing mechanisms, such as a buckle closure. In other embodiments, the cuffs can be made of more rigid material, such as metal cuffs, and include locks as closing mechanisms (i.e., a key lock). In some embodiments, one user can place a body part within the cuff 70 and engage the closing mechanism. In some embodiments, a second user may be required to place a user's body part within the cuff and engage the closing mechanism.

[0037] While the technology has been particularly shown and described with reference to specific illustrative embodiments, it should be understood that various changes in form and detail may be made without departing from the spirit and the scope of the technology.

What is claimed is:

1. An exercise assembly comprising:
   a) a horizontal band configured to be fitted around four vertical sides of at least one of a bed mattress or a bed support frame having a resting surface and four vertical sides, and having a length at least equal to a circumference of the four vertical sides of the at least one of the bed mattress or the bed support frame;
   b) a plurality of features on the band spaced about the length of the horizontal band, each of the plurality of features on the band being configured to removably receive an exercise device; and
   c) a plurality of separate elastic exercise devices, each of the plurality of separate elastic exercise devices comprising, at a first end, an attachment member configured to removably attach the elastic exercise device to one or more of the plurality of features on the band, and comprising, at a second end, a user interface member.

2. The exercise assembly of claim 1, wherein at least one of the plurality of features on the horizontal band comprises at least one hole within the horizontal band sized to removably receive and retain an attachment member of the one or more elastic exercise devices.

3. The exercise assembly of claim 1, wherein the at least one hole comprises a grommet.

4. The exercise assembly of claim 1, wherein the horizontal band has a length greater than the circumference of the lateral sides of the bed mattress or the bed support frame.

5. The exercise assembly of claim 1, wherein the user interface member comprises a handle, strap, loop, or cuff.

6. The exercise assembly of claim 1, wherein the attachment member of each of the plurality of elastic exercise devices is configured to be selectively and removably attached to any of the plurality of features on the band.

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