

Boxing training apparatus

Technical Field

[0001] The present disclosure relates, generally, to boxing training apparatus and kits for assembling such apparatus.

Background

[0002] Boxing training involves the development of many skills required for boxing, such as striking speed, striking timing, striking power, striking technique, cardiovascular endurance, head movement and positioning, conditioning, positional awareness, balance, and footwork, for example.

[0003] In order to improve at least one of striking technique, head movement and positioning, footwork, and positional awareness, a boxer may implement shadow boxing, otherwise known as shadow sparring, as a part of their training regime. Shadow boxing involves a boxer sparring an imaginary opponent in order to simulate a boxing match in a less strenuous setting as opposed to sparring with a sparring partner in order for the boxer to understand which aspects of their skillset need to be improved.

[0004] Shadow boxing may also be performed in front of a mirror in order for the boxer to receive immediate visual feedback and assess their boxing technique, head movement and positioning, footwork, and positional awareness, for example. However, even when shadow boxing in front of a mirror, there is no physical feedback for the boxer to assess aspects such as safe wrist positioning when landing a strike and striking power, since the boxer is performing strikes in the air while observing themselves in the mirror as opposed to striking a heavy bag which provides this physical feedback. However, when striking the heavy bag, the boxer must face the heavy bag and can therefore no longer face the mirror to assess their boxing technique, head movement and positioning, footwork, and positional awareness.

[0005] Any discussion of documents, acts, materials, devices, articles or the like which has been included in the present specification is not to be taken as an admission that any or all of these matters form part of the prior art base or were common general knowledge in the field relevant to the present disclosure as it existed before the priority date of each of the appended claims.

Summary

[0006] In an aspect of the present disclosure, there is provided a boxing training apparatus mountable to a support structure, the apparatus comprising: a support member mountable to the support structure; at least one biasing member mountable to the support member; a strikeable member displaceably mountable to the support member such that the at least one biasing member is disposed between the support member and the strikeable member, the strikeable member having a mirrored surface and being displaceable away from a resting position and towards the support member when the mirrored surface is struck; and a stopping member mountable to the support member such that the strikeable member is urged towards the stopping member by the at least one biasing member for returning the strikeable member to the resting position after the strikeable member has been displaced.

[0007] The strikeable member may define at least one aperture, and the support member may comprise at least one respective guide member received in the at least one aperture of the strikeable member such that the strikeable member is displaceable along the at least one respective guide member via the at least one aperture. The strikeable member may comprise at least one respective insert at least partially received in the at least one aperture for facilitating smooth displacement of the strikeable member along the at least one respective guide member. The stopping member may be mountable to the support member by being mountable to the at least one respective guide member. The stopping member may define at least one aperture, and the stopping member may be mounted to the support member by at least one respective fastener received by the at least one respective guide member via the respective at least one aperture of the

stopping member. The at least one biasing member may be mountable to the support member by being mountable to the at least one respective guide member.

[0008] The strikeable member may be in contact with the stopping member when the strikeable member is in the resting position. The at least one biasing member may be removably mounted to the support member. The, or each, at least one biasing member may comprise at least one cantilever spring member. The, or each, at least one biasing member may comprise a base portion and a plurality of cantilever spring members connected to the base portion, the base portion being mounted to the support member. The plurality of cantilever spring members may be spaced equidistantly from each other about the base portion.

[0009] The, or each, at least one biasing member may comprise a coiled spring. The at least one biasing member may define an effective spring constant of between about 5 and about 15. The at least one biasing member may comprise a plurality of biasing members mounted to the support member and spaced from each other to define a pattern.

[0010] A maximum distance that the strikeable member is displaceable away from the resting position and towards the support member may be between about 10 millimetres and about 100 millimetres. The maximum distance that the strikeable member is displaceable away from the resting position and towards the support member may be between about 30 millimetres and about 50 millimetres.

[0011] The support member may comprise at least one respective locator for locating the at least one biasing member on the support member. The mirrored surface may comprise a pair of spaced vertical lines positioned to act as a guide for positioning of a user's head during use.

[0012] The strikeable member may comprise a non-metal member and a metal sheet, the metal sheet comprising or carrying the mirrored surface. The metal sheet may comprise stainless steel. The non-metal member may comprise plywood. The non-

metal member may comprise plastic. The non-metal member may define at least one hole. The non-metal member may be affixed to the metal sheet by an adhesive.

[0013] The strikeable member may further comprise a cushioning member for absorbing force when the strikeable member is struck. The cushioning member may comprise a foam sheet. The cushioning member may be disposed between the non-metal member and the metal sheet described above. The non-metal member described above may be affixed to a first surface of the foam sheet by an adhesive and the metal sheet described above may be affixed to an opposed, second surface of the foam sheet by an adhesive, for example.

[0014] The support member may comprise a non-metal member. The support member may define at least one hole. The stopping member may comprise a frame member for at least partially covering the support member, the strikeable member, and the at least one biasing member. The apparatus described above may further comprise a damping member disposed between the strikeable member and the stopping member for damping movement and/or impact when the strikeable member returns to the resting position. The damping member may comprise a foam member.

[0015] In another aspect of the present disclosure, there is provided a method of assembling a boxing training apparatus, the method comprising: mounting at least one biasing member of the apparatus to a support member of the apparatus; displaceably mounting a strikeable member of the apparatus to the support member such that the at least one biasing member is disposed between the support member and the strikeable member, the strikeable member having a mirrored surface and being displaceable away from a resting position and towards the support member when the mirrored surface is struck; and mounting a stopping member of the apparatus to the support member such that the strikeable member is urged towards the stopping member by the at least one biasing member for returning the strikeable member to the resting position after the strikeable member has been displaced.

[0016] In another aspect of the present disclosure, there is provided a boxing training apparatus mountable to a support structure, the apparatus comprising: at least one biasing member mountable to the support structure; a strikeable member displaceably mountable to the support structure such that the at least one biasing member is disposed between the support structure and the strikeable member, the strikeable member having a mirrored surface and being displaceable away from a resting position and towards the support structure when the mirrored surface is struck; and a stopping member mountable to the support structure such that the strikeable member is urged towards the stopping member by the at least one biasing member for returning the strikeable member to the resting position after the strikeable member has been displaced.

[0017] The strikeable member may define at least one aperture, and the apparatus may further comprise at least one respective guide member mountable to the support structure, the strikeable member being displaceably mountable to the support structure by the at least one respective guide member being received in the at least one aperture of the strikeable member such that the strikeable member is displaceable along the at least one respective guide member via the at least one aperture. The at least one biasing member may be mountable to the support structure by being mountable to the at least one respective guide member between the support structure and the strikeable member. The stopping member may be mountable to the support structure by being mountable to the at least one respective guide member. The stopping member may comprise a frame member for at least partially covering the strikeable member and the at least one biasing member.

[0018] Throughout this specification the word "comprise", or variations such as "comprises" or "comprising", will be understood to imply the inclusion of a stated element, integer or step, or group of elements, integers or steps, but not the exclusion of any other element, integer or step, or group of elements, integers or steps.

Brief Description of Drawings

[0019] Embodiments of the present disclosure will now be described by way of example only with reference to the accompanying drawings in which:

[0020] Figure 1 shows a perspective view of some embodiments of a boxing training apparatus with a strikeable member and a frame member being visible;

[0021] Figure 2 shows an exploded perspective view of the boxing training apparatus shown in Figure 1 with a support member and a plurality of biasing members mounted to the support member being additionally visible;

[0022] Figure 3 shows a perspective view of the support member shown in Figure 2;

[0023] Figure 4 shows a front view of embodiments of the strikeable member shown in Figures 1 and 2;

[0024] Figure 5 shows embodiments of the plurality of biasing members shown in Figures 2 and 3;

[0025] Figure 6 shows an exploded perspective view of embodiments of the boxing training apparatus shown in Figure 1; and

[0026] Figure 7 shows a flowchart of embodiments of a method of assembling a boxing training apparatus, such as the apparatus shown in Figures 1-6.

Description of Embodiments

[0027] The present disclosure relates generally to boxing training apparatus and kits and methods for assembling such apparatus. Embodiments of such apparatus, kits and methods are shown and described by way of example. In the drawings, reference numeral 10 designates a boxing training apparatus 10 mountable to a support structure (not shown). The apparatus 10 comprises a support member 12 mountable to the

support structure and at least one biasing member 14 mountable to the support member 12. The apparatus 10 further comprises a strikeable member 16 displaceably mountable to the support member 12 such that the at least one biasing member 14 is disposed between the support member 12 and the strikeable member 16. The strikeable member 16 has a mirrored surface 18 and is displaceable away from a resting position 20 and towards the support member 12 when the mirrored surface 18 is struck. The apparatus 10 further comprises a stopping member 23 mountable to the support member 12 such that the strikeable member 16 is urged towards the stopping member 23 by the at least one biasing member 14 for returning the strikeable member 18 to the resting position 20 after the strikeable member 16 has been displaced.

[0028] The support structure may comprise any structure capable of supporting the total mass of the boxing training apparatus 10. For example, the support structure may comprise a wall, one or more pillars or poles, or a board such that the installed boxing apparatus 10 is portable by carrying the board with the boxing apparatus 10 installed thereto. The support member 12 is mountable to the support structure using fasteners such as screws or nails driven through the support member 12 and into the support structure. Alternatively, ropes, cable ties or other fasteners such as stiff clips may be used to mount the support member 12 to the support structure, for example, when the support structure is one or more poles or a portable board.

[0029] In the illustrated embodiments, the stopping member 23 is in the form of a frame member 22. The frame member 22 is for at least partially covering the support member 12, the strikeable member 16, and the at least one biasing member 14. In other embodiments, the frame member 22 may be mountable to the support structure instead of the support member 12. In such embodiments, the support member 12 may be rigidly connected to the frame member 22 in order for the support member 12 to support the strikeable member 16 being displaced against the at least one biasing member 14 mounted to the support member 12. In other embodiments, the stopping member 23 may comprise one or more components, such as one or more brackets, mountable to the support structure to provide a barrier for the strikeable member 16 to bear against when the strikeable member 16 returns to the resting position.

[0030] In the illustrated embodiment, the support member 12 comprises a plywood board and the strikeable member 16 comprises a non-metal member in the form of a non-metal board 24 and a metal member in the form of a metal sheet 26. The metal sheet 26 comprising or carrying the mirrored surface 18. The metal sheet 26 may comprise or be formed of stainless steel. The non-metal board 24 may comprise or be formed of plywood for providing a light and rigid support for the metal sheet 26, for example. The non-metal board 24 may comprise or be formed of plastic in other embodiments in order to increase the flex or resilient deformability of the strikeable member 16 when the mirrored surface 18 is struck. A thickness of the plywood board of the support member 12 and the plywood or plastic board of the non-metal board 24 may be between about 6 millimetres and about 20 millimetres, or between about 8 millimetres and about 14 millimetres, for example. A thickness of the metal sheet 26 may be between about 0.25 millimetres and about 5 millimetres, or between about 0.5 millimetres and about 2 millimetres.

[0031] The non-metal board 24 may be affixed or connected or attached to the metal sheet 26 by an adhesive, for example. In such embodiments, the strikeable member 16 is formed from a laminate comprising the non-metal board 24 and the metal sheet 26. Stainless steel with a surface reflectivity on one side face of between about 60% and about 90% or between about 70% and about 85% may be selected for the metal sheet 26 to form the mirrored surface 18. Other suitable materials may be used instead of the metal sheet 26 to form the mirrored surface 18, such as toughened glass, polycarbonate, and/or plastic, for example.

[0032] The strikeable member 16 defines a plurality of apertures 28, and in the illustrated embodiment, the apertures 28 are formed by a first set of apertures 30 defined by the non-metal board 24 that are coaxial with a second set of apertures 32 defined by the metal sheet 26. The support member 12 comprises a plurality of respective guide members, in the form of threaded inserts 34 having threaded holes on both sides and being formed from metal, received in the apertures 28 of the strikeable member 16 such that the strikeable member 16 is displaceable along the plurality of threaded inserts 34 via the apertures 28. The threaded inserts 34 are in the form of

elongate components to allow for displacement of the strikeable member 16 along the respective threaded inserts 34. In the illustrated embodiment, four apertures 28 are defined in the strikeable member 16 and four respective threaded inserts 34 are mounted to the support member 12. In other embodiments, the respective guide members may be formed from other materials, such as plastic and/or may instead comprise dowel pins, bolts, and nails, for example. A single aperture 28 and a single respective threaded insert 34 may be provided in other embodiments.

[0033] The threaded inserts 34 are mounted to the support member 12 via fasteners 36 inserted into holes 38 defined by the support member 12 and driven into the threaded inserts 34. The fasteners 36 may be in the form of screws as shown in Figure 2 or in the form of nails for embodiments of the respective guide members not comprising threaded inserts 34. In some embodiments, the stopping member 23 may be in the form of one or more respective fasteners, such as screws (not shown), fastened to the threaded inserts 34. It will be appreciated that one of the four threaded inserts 34 is obscured by support member 12 in Figure 2.

[0034] The strikeable member 16 comprises a plurality of respective inserts 40 at least partially received in the apertures 28 of the strikeable member 16 for facilitating smooth displacement of the strikeable member 16 along the threaded inserts 34. In the illustrated embodiment, four respective inserts 40 are partially received in the apertures 28 of the strikeable member 16, since the respective inserts 40 are sized to pass through the first set of apertures 30 defined by the non-metal board 24 and to not pass through the second set of apertures 32 defined by the metal sheet 26, since the second set of apertures 32 have a smaller diameter than the first set of apertures 30. The respective inserts 40 have an inner diameter substantially the same as the diameter of the second set of apertures 32 such that the respective inserts 40 bear against or are in contact with the metal sheet 26 rather than passing through the second set of apertures 32. In other embodiments, the respective inserts 40 may be fully received in the apertures 28, for example, by passing through both the first set of apertures 30 and the second set of apertures 32.

[0035] The respective inserts 40 may be in the form of cylindrical bearings, for example. The respective inserts 40 may be formed from a material that allows for smooth gliding against the metal threaded inserts 34, for example, a polymer such as high density polyethylene or nylon. The respective inserts 40 also act to protect the strikeable member 16 from wearing due to frictional damage caused by the strikeable member 16 sliding against the threaded inserts 34 during displacement of the strikeable member 16. In embodiments of the strikeable member 16 defining a single aperture 24 and the support member 12 comprising a single threaded insert 34, a single respective insert 40 will be at least partially received in the single aperture 28 of the strikeable member 16.

[0036] The frame member 22 is mountable to the support member 12 by being mountable to the threaded inserts 34. The frame member 22 defines a plurality of apertures 42 and the frame member 22 is mounted to the support member 12 by a plurality of respective fasteners 44 received by the threaded inserts 34 via the respective aperture 42 of the frame member 22. The frame member 22 therefore partially covers the strikeable member 16 and fully covers the support member 12 as shown in Figure 1.

[0037] The strikeable member 16 is in contact with the frame member 22 when the strikeable member 16 is in the resting position 20 due to the at least one biasing member 14 urging the strikeable member 16 into contact with the frame member 22. In this way, the range of movement of the strikeable member 16 is defined between a maximum biased position of the at least one biasing member 14 mounted to the support member 12 and the frame member 22. In some embodiments, a maximum distance that the strikeable member 16 is displaceable away from the resting position 20 and towards the support member is between about 10 millimetres and about 100 millimetres, or between about 30 millimetres and about 50 millimetres, for example.

[0038] In the illustrated embodiment, a plurality of biasing members 14 are mounted to the support member 12 and spaced from each other to define a pattern. The pattern defined by the plurality of biasing members 14 may comprise a series of three spaced

columns. However, the plurality of biasing members 14 may be spaced to define any suitable pattern depending on the stiffness required by the user which will be discussed in more detail below.

[0039] In some embodiments, the plurality of biasing members 14 are removably mounted to the support member 12. For example, the plurality of biasing members 14 may be mounted to the support member 12 using fasteners (not shown). In some embodiments, the support member 12 comprises respective locators (not shown) for locating the plurality of biasing members 14 on the support member 12. The respective locators may form a pattern to assist with mounting the plurality of biasing members 14 on the support member 12 such that the plurality of biasing members 14 are spaced from each other to form a pattern. In some embodiments, the respective locators are in the form of recesses configured to receive the plurality of biasing members 14 and support the plurality of biasing members 14 while they are mounted to the support member 12 using, for example, fasteners.

[0040] The plurality of biasing members 14 are schematically illustrated as cylinders in Figures 2 and 3. However, the plurality of biasing members 14 may be in any of the suitable forms discussed below. In some embodiments, each biasing member 14 comprises at least one cantilever spring member 15 (Figure 5). In some embodiments, each biasing member 14 comprises a base portion 17 mounted to the support member 12 and a plurality of cantilever spring members 15 connected to the base portion 17. In this way, the cantilever spring members 15 are cantilevered by being supported at one end 19 by the base portion 17 and configured to apply a biasing force to the strikeable member 16 at another end being a free end 21. In other embodiments, the plurality of cantilever spring members 15 are spaced equidistantly from each other about the base portion 17. This forms a flower-like shape as shown in Figure 5 which moves towards the base portion 17 and expands outwardly as force is applied to the biasing members 14 by the strikeable member 16, and moves away from the base portion 17 and retracts inwardly to return the strikeable member 16 to the resting position 20. In some embodiments, the cantilever spring members 15 may be connected to each other in order to increase the overall stiffness of the biasing member 14. In some embodiments,

Froli™ flexible spring elements are used as the biasing members 14. The biasing members 14 may have different constructions, such as a coiled spring and a serpentine spring extending between two plates.

[0041] The quantity and stiffness of the plurality of biasing members 14, as well as the pattern formed by mounting the plurality of biasing members 14 to the support member 12, affects the type of physical feedback received by a user upon striking the mirrored surface 18. Users have a wide range of punching power and desired use of the apparatus 10, therefore the configuration of the plurality of biasing members 14 may vary greatly depending on the user's punching power and intended use.

[0042] The maximum distance that the strikeable member 16 is displaceable away from the resting position 20 and towards the support member 12 may be between about 10 millimetres and about 100 millimetres, or between about 30 millimetres and about 50 millimetres as stated above. In some embodiments, the force needed to charge or compress or extend each biasing member 14, depending on the configuration of the biasing member 14, varies linearly with respect to a distance that the biasing member 14 is charged or compressed or extended, and is based on a spring constant of the biasing member 14. In this embodiment of linear force variation, an effective spring constant of the combined plurality of biasing members 14 may be between about 4 and about 80 or between about 8 and about 20, for example. The apparatus 10 may include multiple sets of biasing members 14 or be compatible with multiple sets of biasing members 14 to provide multiple stiffness settings to suit users with different punching power and reasons for using the assembly 10. The plurality of biasing members 14 may have spring constants outside of the spring constant ranges provided above.

[0043] Figure 4 shows another embodiment of the strikeable member 16. In the embodiment shown in Figure 4, the mirrored surface 18 comprises a pair of spaced vertical lines 46 positioned to act as a guide for positioning of a user's head during use. The vertical lines 46 may be spaced from each other according to a width of the user's head, which is between about 140 millimetres and about 145 millimetres. The vertical lines 46 may be engraved into or embossed onto the mirrored surface 18, or may be

applied onto the mirrored surface 18 using ink or one or more stickers. The lines 46 may be solid lines or broken lines.

[0044] Figure 6 shows another embodiment of the apparatus 100, where like reference numerals refer to like features as described above. The apparatus 100 comprises biasing members 14 in the form of coiled springs 102 each being mountable to one of the threaded inserts 34. The coiled springs 102 are mounted to the threaded inserts 34 by the threaded inserts 34 being received in the coiled spring 102, in other words, each coiled spring 102 is coiled about the respective threaded insert 34. The force provided by the coiled springs 102 to return the strikeable member 16 to the resting position varies linearly with a distance of compression of the coiled springs 102. Each of the coiled springs 102 comprise a spring constant of between about 1 and about 20, thereby causing an effective spring constant provided by the four coiled springs of between about 4 and about 80. In other embodiments, the spring constant of each coiled spring 102 is between about 1 and about 10, or between about 2 and about 5, thereby causing an effective spring constant of between about 4 and about 40, or between about 8 and about 20. In some embodiments, the spring rate (i.e. spring constant) of coiled springs 102 may be about 0.9 N/mm. Other effective spring constants may be selected to suit different users. For example, users able to deliver more forceful strikes may require higher effective spring constants and users only able to deliver less forceful strikes may require lower effective spring constants. Coiled springs 102 may be formed of compression spring steel, for example. Coiled springs 102 may be right hand closed end springs with around 10 coils. The length of the coiled springs 102 may be around 52 mm, with an outside diameter of around 15.9 mm and a wire diameter of around 1.4 mm, for example.

[0045] The frame 104 comprises recessed portions 105 located at portions of the frame 104 defining the holes 38. Each of the recessed portions 105 are configured to receive a washer 107 for distributing a load applied to the frame 104 via the threaded inserts 34 when the strikeable member 16 is struck.

[0046] The support member 12 comprises a frame 104, the frame 104 comprising a pair of frame members 106 spaced by a pair of connecting frame members 108. The frame 104 also comprises a spine member 110 disposed between the pair of spaced frame members 106. The frame 104 also defines holes 112. In the illustrated embodiment, the holes 112 are defined such that a plurality of cross members 114 connect each of the spaced frame members 106 to the spine member 110. The spaced frame members 106, connecting frame members 108, the spine member 110, and/or the cross members 114, may be used to mount the support member 12 to the support structure, for example, by applying a fastener therethrough. In other embodiments, only a single hole 112 may be defined by the frame 104. In some embodiments, the frame 104 is formed from plywood, and in other embodiments, the frame 104 may be formed from any suitable material such as metal or plastic.

[0047] In the illustrated embodiment, the frame 104 defines mounting holes 116 for receiving fasteners to mount the frame 104 to the support structure. The mounting holes 116 are defined along three spaced horizontal portions of the frame 104, each horizontal portion being formed by two aligned cross members 114 and a portion of the spine member 110. For each of the horizontal portions, two mounting holes 116 are provided on each of the two cross members 114 and a mounting hole 116 is provided on the portion of the spine member 110. The distance between the mounting hole 116 on the portion of the spine member 110 and each of the mounting holes 116 on the cross members 114 correspond to industry standard distances between studs of wall frames, such that in embodiments whereby the supporting structure is a wall, the frame 104 is mountable to three adjacent studs, which increases the stability of the apparatus 10. For example, the distance between the mounting hole 116 on the portion of the spine 110 and each of the two nearest mounting holes 116 on the cross members 114 may be approximately 16 inches or 406 millimetres, and the distance between the mounting hole 116 on the portion of the spine 110 and each of the two furthest mounting holes 116 on the cross members 114 may be approximately 450 millimetres. These two distances suit standard stud distances in two different countries, thereby allowing the frame 104 to be manufactured in one manner to suit multiple countries, which increases manufacturing efficiency. Additional mounting holes 116 may be

provided on the cross members 116 to match stud spacing standards in additional countries. A mounting hole 116 is also provided at an intersection of the spine member 110 and each of the connecting frame members 108 for additional mounting support. The mounting holes 116 may be provided in any suitable orientation for mounting the frame 104 to the structure, or may be omitted such that holes must be drilled through the frame 104 to mount the frame 104 to the structure. In other embodiments, only a single mounting hole 116 may be defined by the frame 104.

[0048] In the illustrated embodiment, the non-metal member of the strikeable member 16 of the apparatus 100 is in the form of a frame 118. The non-metal member defines a plurality of holes 120 for reducing the mass of the strikeable member 16 to allow for easier displacement of the strikeable member 16 and less wear on the threaded inserts 34. In some embodiments, the frame 118 is formed from plywood, and in other embodiments the frame 118 may be formed from any suitable material such as metal or plastic.

[0049] The strikeable member 16 further comprises a cushioning member 122 for absorbing force when the strikeable member 16 is struck. The cushioning member 122 is disposed between the frame 118 and the metal sheet 26. In the illustrated embodiment, the cushioning member 122 comprises a foam sheet 124. The foam sheet 124 defines holes 126 forming the apertures 28 for at least partially receiving the inserts 40. The frame 118 is affixed to a first surface 128 of the foam sheet 124 by an adhesive and the metal sheet 26 is affixed to an opposed, second surface of the foam sheet 124 by an adhesive. In this way, the strikeable member 16 comprises a laminate of the frame 118, the foam sheet 124 and the metal sheet 26. The cushioning member 122 is configured to absorb at least part of a force of a strike delivered to the strikeable member 16. The cushioning member 122 may thereby reduce the risk of the user injuring their hand and/or wrist during use of the apparatus 100 and may provide a striking experience for the user more closely resembling that of a heavy bag.

[0050] The apparatus 100 further comprises a damping member 132 disposed between the strikeable member 16 and the frame member 22 for damping movement

and/or impact due to force when the strikeable member 16 returns to the resting position. In other words, the damping member 132 softens the contact between the strikeable member 16 and the frame member 22 when the strikeable member 16 returns to the resting position. This allows for quieter use of the apparatus 100 and reduces the wear of both the strikeable member 16 and the frame member 22 over time.

[0051] The damping member 132 may be a foam member. In the illustrated embodiment, the damping member 132 is provided as a foam frame or gasket 134 affixed to an underside of the frame member 22 using, for example, an adhesive or fasteners. The foam gasket 134 defines notches 136 for allowing the respective fasteners 44 to pass therethrough to be received by the threaded inserts 34.

[0052] Figure 7 shows a flowchart of an embodiment of a method 200 of assembling the apparatus 10, 100. The method 200 comprises mounting 202 the at least one biasing member 14 to the support member 12. The method 200 further comprises displaceably mounting 204 the strikeable member 16 to the support member 12 such that the at least one biasing member 14 is disposed between the support member 12 and the strikeable member 16, the strikeable member 16 having the mirrored surface 18 and being displaceable away from a resting position and towards the support member 12 when the mirrored surface 18 is struck. The method 200 further comprises mounting 206 the stopping member 23 to the support member 12 such that the strikeable member 16 is urged towards the stopping member 23 by the at least one biasing member 14 for returning the strikeable member 16 to the resting position after the strikeable member 16 has been displaced.

[0053] In some embodiments, the method 200 further comprises attaching the threaded inserts 34 to the support member 12 using the fasteners 36 via the holes 38 defined by the support member 12. In some embodiments, the method 200 further comprises applying the coiled springs 102 over the threaded inserts 34. In some embodiments, the method 200 further comprises positioning the strikeable member 16 such that the threaded inserts are received in the apertures 28 defined by the strikeable member 16. In some embodiments, the method 200 further comprises positioning the

frame member 22 over the strikeable member 16. In some embodiments, the method 200 further comprises applying the respective fasteners 44 to the threaded inserts 34 via the respective aperture 42 of the frame member 22. In some embodiments, the method 200 further comprises mounting the apparatus 10, 100 to the support structure.

[0054] In some embodiments of the apparatus 10, 100, the support member 12 may be omitted. In these embodiments, the remaining components of the apparatus 10, 100 are mounted to the support structure instead of the support member 12. These embodiments of the apparatus 10, 100 therefore comprise the at least one biasing member 14 mountable to the support structure; the strikeable member 16 displaceably mountable to the support structure such that the at least one biasing member 14 is disposed between the support structure and the strikeable member 16, the strikeable member 16 having the mirrored surface 18 and being displaceable away from the resting position and towards the support structure when the mirrored surface 18 is struck; and the stopping member 23 mountable to the support structure such that the strikeable member 16 is urged towards the stopping member 23 by the at least one biasing member 14 for returning the strikeable member 16 to the resting position after the strikeable member 16 has been displaced.

[0055] In the embodiments of the apparatus 10, 100 with the support member 12 omitted, the at least one respective guide member 34 is mountable to the support structure and the strikeable member 16 is displaceably mountable to the support structure by the at least one respective guide member 34 being received in the at least one aperture 28 of the strikeable member 16 such that the strikeable member 16 is displaceable along the at least one respective guide member 34 via the at least one aperture 28. In the embodiments of the apparatus 10, 100 with the support member 12 omitted, the at least one biasing member 14 is mountable to the support structure by being mountable to the at least one respective guide member 34 between the support structure and the strikeable member 16. In the embodiments of the apparatus 10, 100 with the support member 12 omitted, the stopping member 23 is mountable to the support structure by being mountable to the at least one respective guide member 34. The stopping member 23 may be mountable to the at least one respective guide

member 34 such that at least part of the stopping member 23 is disposed further from the support structure than the strikeable member 16. In the embodiments of the apparatus 10, 100 with the support member 12 omitted, the stopping member 23 may comprise the frame member 22 for at least partially covering the strikeable member 16 and the at least one biasing member 14.

[0056] In use, a user stands in front of the apparatus 10, 100 such that the user sees themselves in the mirrored surface 18. In use, the user strikes the mirrored surface 18 of the strikeable member 16, and in particular, the user punches the mirrored surface 18 of the strikeable member 16. The user's punch overcomes the urging force applied by the at least one biasing member 14 to the strikeable member 16 towards the resting position 20 and causes the strikeable member 16 to be displaced away from the resting position 20 and towards the support member 12. The kinetic energy delivered by the user's punch is absorbed by the at least one biasing member 14, and in some cases additionally by the supporting member 12. The at least one biasing member 14 urges the strikeable member 16 towards the frame member 22 for returning the strikeable member 16 to the resting position 20 in order for the user to deliver another punch.

[0057] The apparatus 10, 100 provides both physical feedback and visual feedback simultaneously for a user to assess and improve one or more of their boxing skills, such as boxing technique, head movement and positioning, footwork, positional awareness, punching power, and safe wrist positioning when striking, for example. The apparatus 10, 100 also has a reduced footprint compared to a heavy bag and is able to be mounted to a support structure such as a wall, thereby occupying less space than a heavy bag. Further, a heavy bag requires secure mounting to a ceiling or a heavy base, which is more complex to install and transport than the apparatus 10, 100.

[0058] The embodiment of the strikeable member 16 comprising the metal sheet 26 formed from stainless steel or comprising polycarbonate provides the mirrored surface 18 with sufficient reflectivity while providing strength and durability in order to be able to absorb strikes such as punches without becoming significantly damaged. The embodiment of the strikeable member 16 comprising plywood reduces the mass of the

strikeable member 16 compared to the sole use of metal for the strikeable member 16, thereby allowing the strikeable member 16 to be displaced more easily and smoothly. The embodiment of the strikeable member 16 comprising the frame 118 defining the holes 120 further reduces the mass of the strikeable member 16.

[0059] The embodiment of the support member 12 comprising a plywood board decreases the overall mass of the apparatus 10. The embodiment of the support member 12 defining the holes 112 also decreases the overall mass of the apparatus 100. The embodiment of the support member 12 in the form of the frame 104 formed from plywood further decreases the overall mass of the apparatus 100. This decrease in mass allows for more efficient and less costly shipping of the apparatus 10, 100.

[0060] The removability of the at least one biasing member 14 also provides versatility in allowing the user to select a physical feedback regime by adjusting the quantity, pattern and/or stiffness of the at least one biasing member 14. The pair of spaced vertical lines 46 on the mirrored surface 18 provides additional visual feedback to the user regarding their head positioning and movement during shadow boxing.

[0061] It will be appreciated that the apparatus 10, 100 may be provided as an assembled product or as an unassembled boxing training kit for assembling the apparatus 10, 100. It will also be appreciated that any combination of the components shown in the various embodiments may be implemented to form the apparatus 10, 100.

[0062] It will be appreciated by persons skilled in the art that numerous variations and/or modifications may be made to the above-described embodiments, without departing from the broad general scope of the present disclosure. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive.

CLAIMS:

1. A boxing training apparatus mountable to a support structure, the apparatus comprising:

a support member mountable to the support structure;

at least one biasing member mountable to the support member;

a strikeable member displaceably mountable to the support member such that the at least one biasing member is disposed between the support member and the strikeable member, the strikeable member having a mirrored surface and being displaceable away from a resting position and towards the support member when the mirrored surface is struck; and

a stopping member mountable to the support member such that the strikeable member is urged towards the stopping member by the at least one biasing member for returning the strikeable member to the resting position after the strikeable member has been displaced.

2. The apparatus of claim 1, wherein the strikeable member defines at least one aperture, and wherein the support member comprises at least one respective guide member received in the at least one aperture of the strikeable member such that the strikeable member is displaceable along the at least one respective guide member via the at least one aperture.

3. The apparatus of claim 2, wherein the strikeable member comprises at least one respective insert at least partially received in the at least one aperture for facilitating smooth displacement of the strikeable member along the at least one respective guide member.

4. The apparatus of claim 2 or claim 3, wherein the stopping member is mountable to the support member by being mountable to the at least one respective guide member.
5. The apparatus of claim 4, wherein the stopping member defines at least one aperture, and wherein the stopping member is mounted to the support member by at least one respective fastener received by the at least one respective guide member via the respective at least one aperture of the stopping member.
6. The apparatus of any one of claims 2 to 5, wherein the at least one biasing member is mountable to the support member by being mountable to the at least one respective guide member.
7. The apparatus of any one of the preceding claims, wherein the strikeable member is in contact with the stopping member when the strikeable member is in the resting position.
8. The apparatus of any one of the preceding claims, wherein the at least one biasing member is removably mounted to the support member.
9. The apparatus of any one of the preceding claims, wherein the, or each, at least one biasing member comprises a coiled spring.
10. The apparatus of any one of the preceding claims, wherein the at least one biasing member defines an effective spring constant of between about 4 and about 80.
11. The apparatus of any one of the preceding claims, wherein the at least one biasing member comprises a plurality of biasing members mounted to the support member and spaced from each other to define a pattern.
12. The apparatus of any one of the preceding claims, wherein a maximum distance that the strikeable member is displaceable away from the resting position and

towards the support member is between about 10 millimetres and about 100 millimetres.

13. The apparatus of claim 12, wherein the maximum distance that the strikeable member is displaceable away from the resting position and towards the support member is between about 30 millimetres and about 50 millimetres.

14. The apparatus of any one of the preceding claims, wherein the mirrored surface comprises a pair of spaced vertical lines positioned to act as a guide for positioning of a user's head during use.

15. The apparatus of any one of the preceding claims, wherein the strikeable member comprises a non-metal member and a metal sheet, the metal sheet comprising or carrying the mirrored surface.

16. The apparatus of claim 15, wherein the metal sheet comprises stainless steel.

17. The apparatus of claim 15 or claim 16, wherein the non-metal member comprises plywood.

18. The apparatus of claim 15 or claim 16, wherein the non-metal member comprises plastic.

19. The apparatus of any one of claims 15 to 18, wherein the non-metal member defines at least one hole.

20. The apparatus of any one of claims 15 to 19, wherein the non-metal member is affixed to the metal sheet by an adhesive.

21. The apparatus of any one of the preceding claims, wherein the strikeable member further comprises a cushioning member for absorbing force when the strikeable member is struck.

22. The apparatus of claim 21, when dependent on any one of claims 15 to 19, wherein the cushioning member is disposed between the non-metal member and the metal sheet.

23. The apparatus of claim 21 or claim 22, wherein the cushioning member comprises a foam sheet.

24. The apparatus of claim 23, when dependent on claim 22, wherein the non-metal member is affixed to a first surface of the foam sheet by an adhesive and the metal sheet is affixed to an opposed, second surface of the foam sheet by an adhesive.

25. The apparatus of any one of the preceding claims, wherein the support member comprises a non-metal member.

26. The apparatus of any one of the preceding claims, wherein the support member defines at least one hole.

27. The apparatus of claim 26, wherein the support member comprises a frame, the frame comprising a pair of spaced frame members and a spine member disposed between the pair of spaced frame members.

28. The apparatus of any one of the preceding claims, wherein the stopping member comprises a frame member for at least partially covering the support member, the strikeable member, and the at least one biasing member.

29. The apparatus of any one of the preceding claims, further comprising a damping member disposed between the strikeable member and the stopping member for damping movement and/or impact when the strikeable member returns to the resting position.

30. The apparatus of claim 29, wherein the damping member comprises a foam member.

31. A method of assembling a boxing training apparatus, the method comprising:

mounting at least one biasing member of the apparatus to a support member of the apparatus;

displaceably mounting a strikeable member of the apparatus to the support member such that the at least one biasing member is disposed between the support member and the strikeable member, the strikeable member having a mirrored surface and being displaceable away from a resting position and towards the support member when the mirrored surface is struck; and

mounting a stopping member of the apparatus to the support member such that the strikeable member is urged towards the stopping member by the at least one biasing member for returning the strikeable member to the resting position after the strikeable member has been displaced.

32. A boxing training apparatus mountable to a support structure, the apparatus comprising:

at least one biasing member mountable to the support structure;

a strikeable member displaceably mountable to the support structure such that the at least one biasing member is disposed between the support structure and the strikeable member, the strikeable member having a mirrored surface and being displaceable away from a resting position and towards the support structure when the mirrored surface is struck; and

a stopping member mountable to the support structure such that the strikeable member is urged towards the stopping member by the at least one biasing member for returning the strikeable member to the resting position after the strikeable member has been displaced.

33. The apparatus of claim 32, wherein the strikeable member defines at least one aperture, and wherein the apparatus further comprises at least one respective guide member mountable to the support structure, the strikeable member being displaceably mountable to the support structure by the at least one respective guide member being received in the at least one aperture of the strikeable member such that the strikeable member is displaceable along the at least one respective guide member via the at least one aperture.

34. The apparatus of claim 33, wherein the at least one biasing member is mountable to the support structure by being mountable to the at least one respective guide member between the support structure and the strikeable member.

35. The apparatus of claim 33 or claim 34, wherein the stopping member is mountable to the support structure by being mountable to the at least one respective guide member.

36. The apparatus of any one of claims 32 to 35, wherein the stopping member comprises a frame member for at least partially covering the strikeable member and the at least one biasing member.