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MARTIAL ARTS***A63B 71/06* (2006.01)*A63B 71/06* (2006.01)*A63B 71/12* (2006.01)(71) Applicant: **TNC KOREA Co., Ltd.**, Uijeongbu-si
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ABSTRACT(86) PCT No.: **PCT/KR2016/013631**

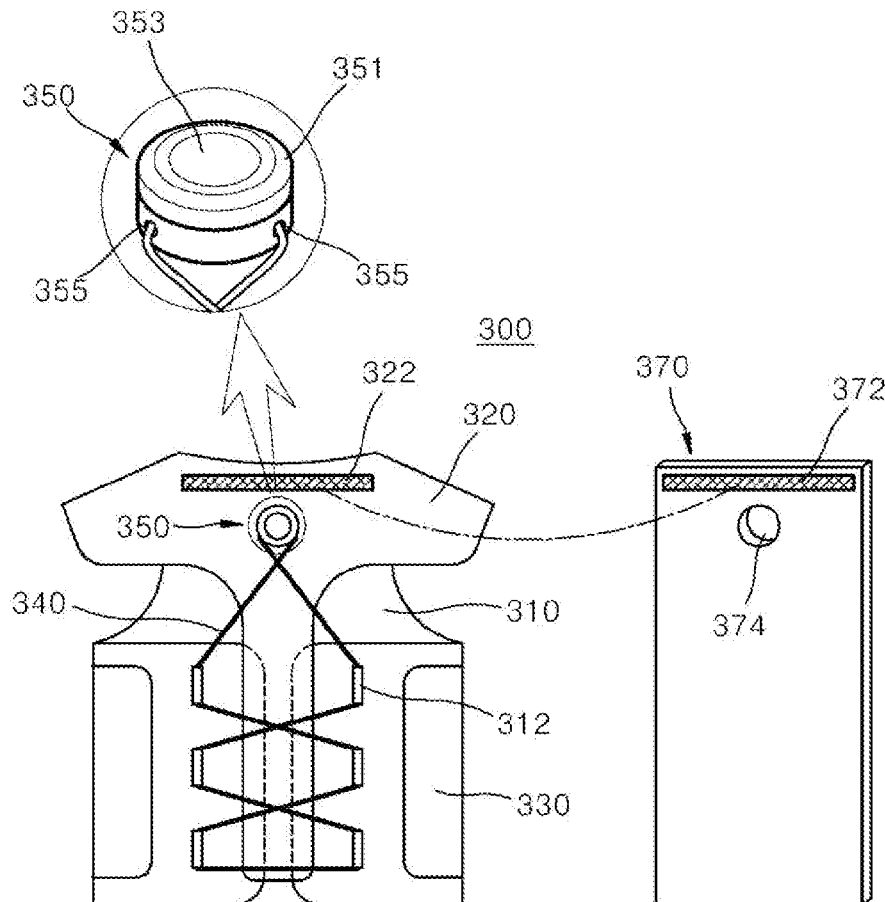
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A torso protector device for martial arts is disclosed. The device comprises a cylindrical torso protection body to protect a wearer's torso; a shoulder cover coupled to the cylindrical torso protection body at front and rear portions thereof, wherein the shoulder cover has a neck opening defined in a top thereof, wherein left and right arm passing openings are defined in the shoulder cover in the left and right sides thereof respectively; a wire coupled to the cylindrical torso protection body and the shoulder cover; a wire adjuster module coupled to the wire; and a screener to screen the wire, wherein an adjustment dial is operatively coupled to the wire adjuster module, wherein the rotation of the adjustment dial results in length increase or decrease of the wire.



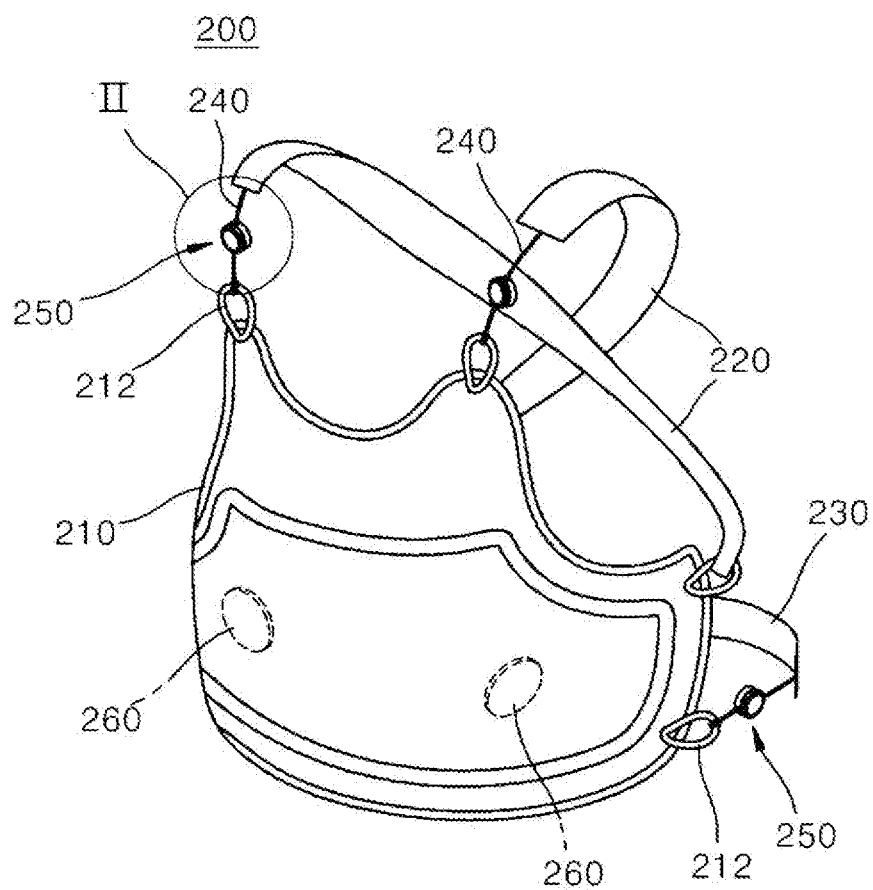


FIG. 1

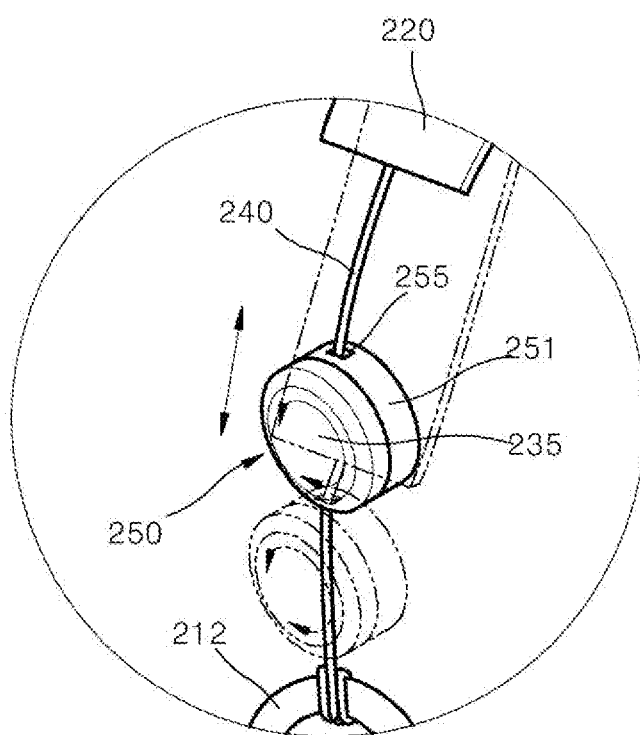


FIG. 2

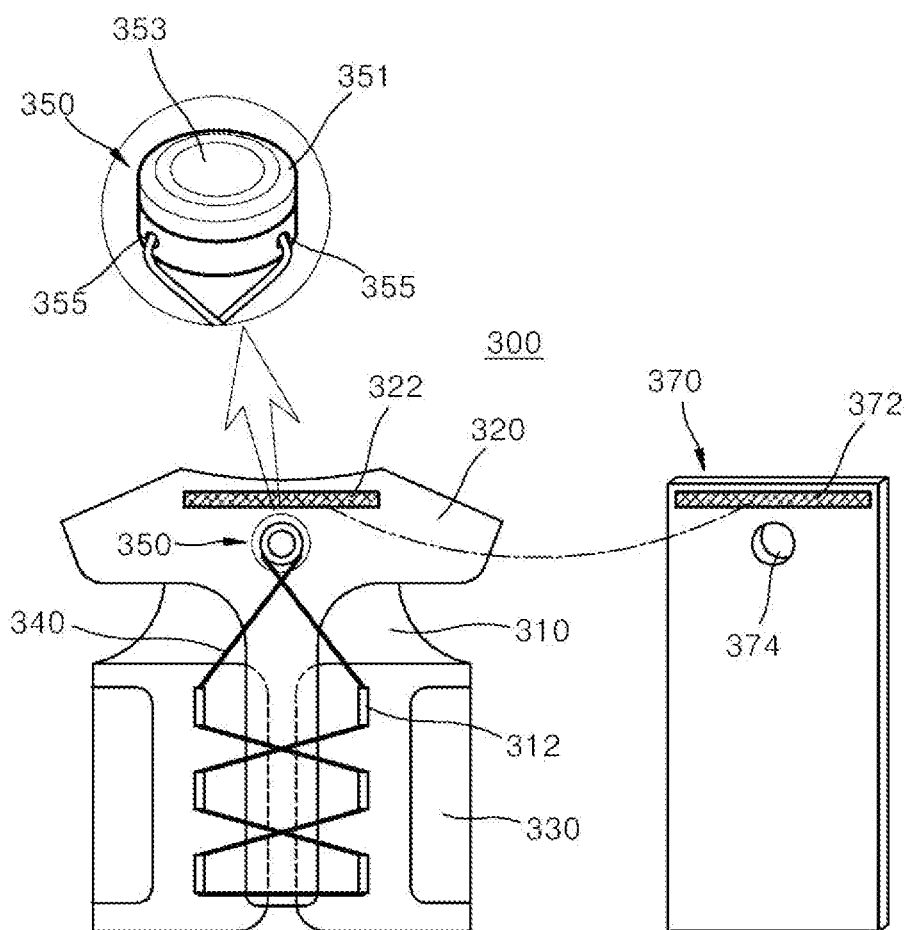


FIG. 3

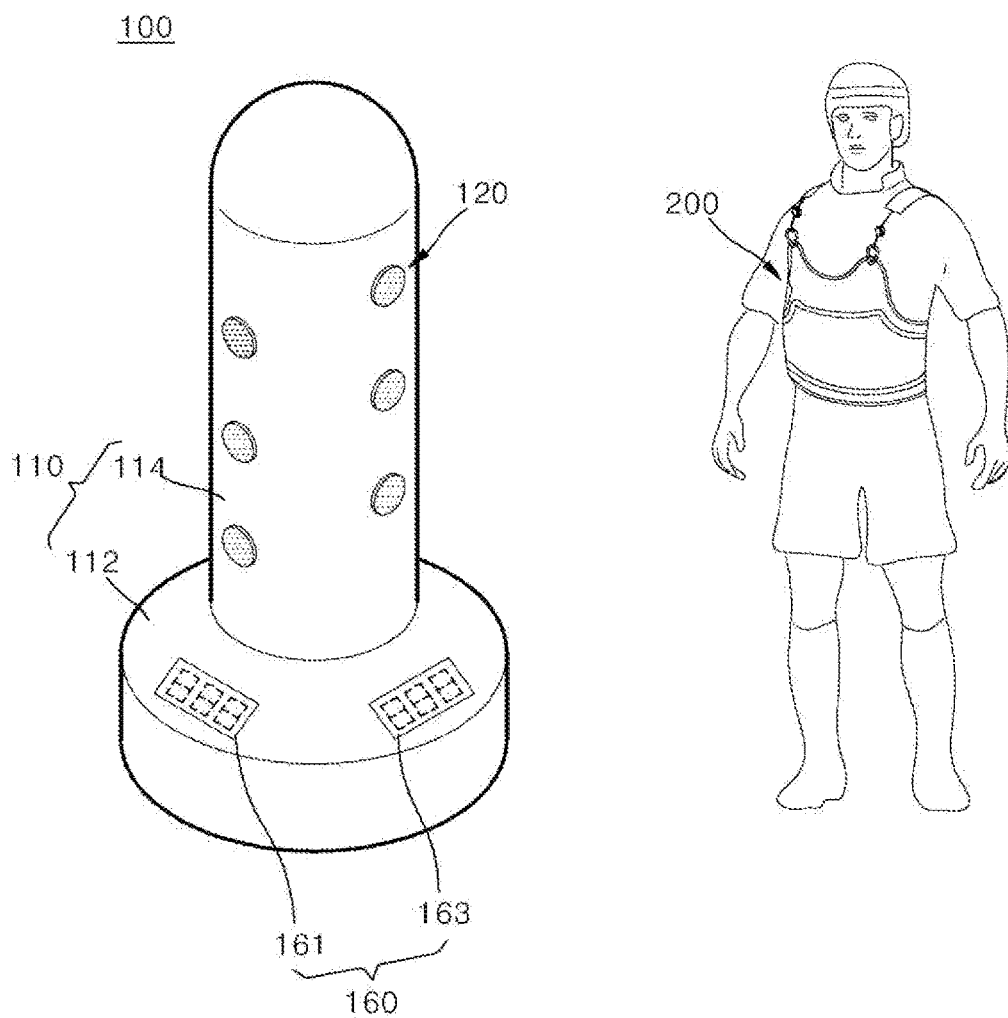


FIG. 4

TORSO PROTECTOR DEVICE FOR MARTIAL ARTS

BACKGROUND

Field of the Present Disclosure

[0001] The present disclosure relates to a torso protector device for martial arts, and, more particularly, to a torso protector device for martial arts, which is worn on a user on her/his own.

Discussion of Related Art

[0002] As well known, various kinds of attacks such as kicking, fists, and hand-snatching are performed when fighting martial arts such as taekwondo. If such an attack is hit directly by the body, it can lead to injuries. Thus, the body protector is necessary.

[0003] A torso protector device for martial arts includes a torso cover to protect a wearer's torso; left and right upper straps to connect left and right top portions of the torso cover to left and right middle portions of the torso cover or right and left middle portions of the torso cover respectively; and a lower strap to connect left and right lower portions of the torso cover to each other.

[0004] Meanwhile, in the process of wearing the torso protector, the torso cover is put on the upper body of the user in a state where the strap attached to the torso cover is loosened, and, then, the other assistant adjusts the length of the strap to enable the torso cover to tightly fit with the body.

[0005] As described above, in the conventional method of wearing the body protector, it is difficult for the user to adjust the strap to fit his/her body by himself. The strap may be loosened not only before the game but also during the game. In addition, there is a problem in that it is a very difficult task for the other person to match the wearer's own feeling in the process of adjusting the strap.

[0006] A prior art is as follows: Patent document 1 KR20-0475340 B; patent document 2 KR10-0660405 B.

SUMMARY

[0007] This Summary is provided to introduce a selection of concepts in a simplified form that are further described below in the Detailed Description. This Summary is not intended to identify all key features or essential features of the claimed subject matter, nor is it intended to be used alone as an aid in determining the scope of the claimed subject matter.

[0008] The present disclosure is to provide a torso protector device for martial arts wherein a wearer may adjust a length of a fixing strap on her/his own to match the wearer's own feeling.

[0009] In one aspect of the present disclosure, there is provided a torso protector device for martial arts, the device comprising: a torso cover to protect a wearer's torso; left and right upper straps to connect left and right top portions of the torso cover to left and right middle portions of the torso cover or right and left middle portions of the torso cover respectively; a lower strap to connect left and right lower portions of the torso cover to each other; left and right upper wires to connect the left and right top portions of the torso cover to the left and right upper straps respectively; left and right lower wires to connect the left and right lower portions of the torso cover to the lower strap; left and right upper wire

adjuster modules disposed at the left and right upper wires respectively; and left and right lower wire adjuster modules disposed at the left and right lower wires respectively, wherein an adjustment dial is operatively coupled to each of the wire adjuster modules, wherein the rotation of the adjustment dial results in length increase or decrease of each of the wires.

[0010] In one implementation, each of the left and right upper and lower wire adjuster modules includes a wire winding housing in which each wire is wound; the adjustment dial rotatably coupled to the wire winding housing; and wire passing-through holes defined in the wire winding housing to allow passing of the wire therethrough.

[0011] In one implementation, the wire winding housing has a winding roll received therein to wind the wire around roll.

[0012] In one implementation, the adjustment dial is operatively coupled to the winding roll such that the rotation of the adjustment dial enable or disable the rotation of the winding roll depending on engagement or disengagement therebetween.

[0013] In one implementation, when the adjustment dial is tightly engaged to the winding roll, the adjustment dial is configured to rotate not in a reverse direction but in a forward direction, wherein when the adjustment dial is disengaged from the winding roll, the adjustment dial is configured to rotate in a reverse direction or in a forward direction.

[0014] In one aspect of the present disclosure, there is provided a torso protector device for martial arts, the device comprising: a cylindrical torso protection body to protect a wearer's torso; a shoulder cover coupled to the cylindrical torso protection body at front and rear portions thereof, wherein the shoulder cover has a neck opening defined in a top thereof, wherein left and right arm passing openings are defined in the shoulder cover in the left and right sides thereof respectively; a wire coupled to the cylindrical torso protection body and the shoulder cover; a wire adjuster module coupled to the wire; and a screener to screen the wire, wherein an adjustment dial is operatively coupled to the wire adjuster module, wherein the rotation of the adjustment dial results in length increase or decrease of the wire.

[0015] In one implementation, connection rings are arranged in left and right columns on the cylindrical torso protection body on the front face thereof, wherein the wire passes through the connection rings between the left and right columns in a zigzag form.

[0016] In one aspect of the present disclosure, there is provided a training set for martial arts, the system comprising: a kick target device; and the torso protector device defined above, wherein the kick target device includes a main body, and hit detectors disposed on the main body, wherein the hit detectors is configured to sense a hit by a trainee, wherein the kick target device includes a display unit connected to the hit detectors for displaying the hit counts by the trainee, wherein the main body includes a base portion on a ground and a target structure extending vertically upwards from the base portion, wherein the display unit is disposed on the base portion, wherein the hit detectors are disposed on the target structure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] The accompanying drawings, which are incorporated in and form a part of this specification and in which

like numerals depict like elements, illustrate embodiments of the present disclosure and, together with the description, serve to explain the principles of the disclosure.

[0018] FIG. 1 is a perspective view of a torso protector device for martial arts in accordance with one embodiment of the present disclosure.

[0019] FIG. 2 illustrates an operation of a wire adjuster module of a torso protector device for martial arts in accordance with one embodiment of the present disclosure.

[0020] FIG. 3 is a perspective view of a torso protector device for martial arts in accordance with another embodiment of the present disclosure.

[0021] FIG. 4 is a perspective view of a kick target device and a user wearing the torso protector device for martial arts in accordance with one embodiment of the present disclosure.

[0022] For simplicity and clarity of illustration, elements in the figures are not necessarily drawn to scale. The same reference numbers in different figures denote the same or similar elements, and as such perform similar functionality. Also, descriptions and details of well-known steps and elements are omitted for simplicity of the description. Furthermore, in the following detailed description of the present disclosure, numerous specific details are set forth in order to provide a thorough understanding of the present disclosure. However, it will be understood that the present disclosure may be practiced without these specific details. In other instances, well-known methods, procedures, components, and circuits have not been described in detail so as not to unnecessarily obscure aspects of the present disclosure.

DETAILED DESCRIPTIONS

[0023] Examples of various embodiments are illustrated and described further below. It will be understood that the description herein is not intended to limit the claims to the specific embodiments described. On the contrary, it is intended to cover alternatives, modifications, and equivalents as may be included within the spirit and scope of the present disclosure as defined by the appended claims.

[0024] It will be understood that, although the terms “first”, “second”, “third”, and so on may be used herein to describe various elements, components, regions, layers and/or sections, these elements, components, regions, layers and/or sections should not be limited by these terms. These terms are used to distinguish one element, component, region, layer or section from another element, component, region, layer or section. Thus, a first element, component, region, layer or section described below could be termed a second element, component, region, layer or section, without departing from the spirit and scope of the present disclosure.

[0025] It will be understood that when an element or layer is referred to as being “connected to”, or “coupled to” another element or layer, it can be directly on, connected to, or coupled to the other element or layer, or one or more intervening elements or layers may be present. In addition, it will also be understood that when an element or layer is referred to as being “between” two elements or layers, it can be the only element or layer between the two elements or layers, or one or more intervening elements or layers may also be present.

[0026] Spatially relative terms, such as “beneath,” “below,” “lower,” “under,” “above,” “upper,” and the like, may be used herein for ease of explanation to describe one

element or feature's relationship to another element or feature as illustrated in the figures. It will be understood that the spatially relative terms are intended to encompass different orientations of the device in use or in operation, in addition to the orientation depicted in the figures. For example, if the device in the figures is turned over, elements described as “below” or “beneath” or “under” other elements or features would then be oriented “above” the other elements or features. Thus, the example terms “below” and “under” can encompass both an orientation of above and below. The device may be otherwise oriented for example, rotated 90 degrees or at other orientations, and the spatially relative descriptors used herein should be interpreted accordingly.

[0027] The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of the present disclosure. As used herein, the singular forms “a” and “an” 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”, “includes”, and “including” when used in this specification, specify the presence of the stated features, integers, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, operations, elements, components, and/or portions thereof. As used herein, the term “and/or” includes any and all combinations of one or more of the associated listed items. Expression such as “at least one of” when preceding a list of elements may modify the entire list of elements and may not modify the individual elements of the list.

[0028] Unless otherwise defined, all terms including technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this inventive concept belongs. It will be further understood that terms, such as those defined in commonly used dictionaries, should be interpreted as having a meaning that is consistent with their meaning in the context of the relevant art and will not be interpreted in an idealized or overly formal sense unless expressly so defined herein.

[0029] In the following description, numerous specific details are set forth in order to provide a thorough understanding of the present disclosure. The present disclosure may be practiced without some or all of these specific details. In other instances, well-known process structures and/or processes have not been described in detail in order not to unnecessarily obscure the present disclosure. Further, the use of “may” when describing embodiments of the present disclosure refers to “one or more embodiments of the present disclosure.”

[0030] FIG. 1 is a perspective view of a torso protector device for martial arts in accordance with one embodiment of the present disclosure. FIG. 2 illustrates an operation of a wire adjuster module of a torso protector device for martial arts in accordance with one embodiment of the present disclosure. FIG. 3 is a perspective view of a torso protector device for martial arts in accordance with another embodiment of the present disclosure. FIG. 4 is a perspective view of a kick target device and a user wearing the torso protector device for martial arts in accordance with one embodiment of the present disclosure.

[0031] The torso protector device 200 for martial arts in accordance with one embodiment of the present disclosure may include a torso cover 210 to protect a wearer's torso;

left and right upper straps **220** to connect left and right top portions of the torso cover **210** to left and right middle portions of the torso cover **210** or right and left middle portions of the torso cover **210** respectively; a lower strap **230** to connect left and right lower portions of the torso cover **210** to each other; left and right upper wires **240** to connect the left and right top portions of the torso cover **210** to the left and right upper straps **220** respectively; left and right lower wires **240** to connect the left and right lower portions of the torso cover **210** to the lower strap **230**; left and right upper wire adjuster modules **250** disposed at the left and right upper wires **240** respectively; left and right lower wire adjuster modules **250** disposed at the left and right lower wires **240** respectively; and at least one hit detector **260** disposed on the torso cover **210**.

[0032] The torso cover **210** may extend downward to protect the scrotum.

[0033] The left and right upper straps **220** may cross with each other. The left and right upper straps **220** may extend around the shoulder of the wearer to secure the torso cover **210** to the body of the wearer. Each of the left and right upper straps **220** may be embodied as a stack of clothes which are coupled to each other via a sewing. Each of the left and right upper straps **220** may have a larger area in a middle portion thereof than in both ends thereof since the middle portion contacts the shoulder. This may spread the weight of the torso cover **210** uniformly.

[0034] The lower strap **230** may be embodied as a stack of clothes which are coupled to each other via a sewing. Each of the left and right upper straps **220** may have a larger area in both ends thereof than in a middle portion thereof since the both ends contacts the left and right sides of a waist portion of the user. This may improve wearing feel for the wearer.

[0035] The left and right upper wires **240** may connect the left and right top portions of the torso cover **210** to the left and right upper straps **220** respectively. The left and right lower wires **240** may connect the left and right lower portions of the torso cover **210** to the lower strap **230**. In one embodiment, the left and right upper wires **240** may be connected to the left and right top portions of the torso cover **210** via left and right upper rings **210** respectively. The left and right lower wires **240** may be connected to the left and right lower portions of the torso cover **210** via left and right lower rings **210** respectively.

[0036] The left and right upper wire adjuster modules **250** may be disposed at the left and right upper wires **240** respectively to allow length adjustment of the left and right upper wires **240**. The left and right lower wire adjuster modules **250** may be disposed at the left and right lower wires **240** respectively to allow length adjustment of the left and right lower wires **240**.

[0037] Each of the left and right upper and lower wire adjuster modules **250** may include a wire winding housing **251** in which each wire **240** is wound, an adjustment dial **253** rotatably coupled to the wire winding housing **251**, and wire passing-through holes **255** defined in the wire winding housing **251** to allow passing of the wire **240** therethrough.

[0038] The wire winding housing **251** may have a winding roll (not shown) received therein to wind the wire **240** around the same. The winding roll may be operatively coupled to the adjustment dial **253**. The adjustment dial **253** may be operatively coupled to the winding roll such that the rotation of the adjustment dial **253** may affect or not the rotation of the winding roll depending on engagement or

disengagement therebetween. In one embodiment, the user presses the adjustment dial **253** and thus tightly engages the adjustment dial **253** to the winding roll, and, then, rotates the adjustment dial **253** to rotate the winding roll to adjust the length of the wire. In this connection, the adjustment dial **253** may rotate continuously or step by step. The adjustment dial **253** may be configured to rotate not in the reverse direction but in the forward direction to suppress the free rotation of the winding roll. The forward rotation of the winding roll may lead to a reduction of the wire length.

[0039] When the user takes off the torso protector device **200**, the user may pull the adjustment dial **253** to disengage the adjustment dial **253** from the winding roll. When the adjustment dial **253** is disengaged from the winding roll, the free rotation of the winding roll may be available. In other words, the winding roll may rotate in the reverse direction to increase the length of the wire **240**. Thus, the user may take off the torso protector device **200**.

[0040] FIG. 3 is a perspective view of a torso protector device for martial arts in accordance with another embodiment of the present disclosure.

[0041] The torso protector device **300** for martial arts in accordance with one embodiment of the present disclosure may include a cylindrical torso protection body **310** to protect a wearer's torso; a shoulder cover **320** coupled to the cylindrical torso protection body **310** at front and rear portions thereof, wherein the shoulder cover **320** has a neck opening defined in a top thereof, wherein left and right arm passing openings are defined in the shoulder cover **320** in the left and right sides thereof respectively; a waist pad **330** to cover the waist portion of the cylindrical torso protection body **310**; a wire **340** coupled to the cylindrical torso protection body **310** and the shoulder cover **320**; a wire adjuster module **350** coupled to the wire **340**, a hit detector (not shown), and a screener **370** to screen the wire **340**.

[0042] The shoulder cover **320** may be coupled to a top of the cylindrical torso protection body **310** at front and rear portions thereof. The cylindrical torso protection body **310** may be monolithic with the shoulder cover **320**. The shoulder cover **320** has a neck opening defined in a top thereof. The left and right arm passing openings are defined in the shoulder cover **320** in the left and right sides thereof respectively.

[0043] The waist pad **330** may cover the waist portion of the cylindrical torso protection body **310**. Alternatively, it may dispense with the waist pad **330**. In one embodiment, the cylindrical torso protection body **310** may be monolithic with the waist pad **330**.

[0044] As shown in FIG. 3, the adjuster module **350** may be disposed on the shoulder cover **320** on a front face thereof.

[0045] The connection rings **312** may be arranged in left and right columns on the cylindrical torso protection body **310** on the front face thereof. In one embodiment, the connection rings **312** may be arranged in a staggered manner between the left and right columns. The connection rings **312** may be spaced from each other. The wire **340** may pass through the connection rings between the left and right columns in a zigzag form. The wire **340** may extend to the wire adjuster module **350**. The wire **340** may be wound by the wire adjuster module **350**.

[0046] Alternatively, the wire **340** may be embedded in the cylindrical torso protection body **310** and may be visually invisible. The wire **340** may extend seamlessly through the

cylindrical torso protection body 310 and the waist pad 330 and/or the shoulder cover 320.

[0047] The wire adjuster module 350 may include a wire winding housing 351 in which the wire 340 is wound, an adjustment dial 353 rotatably coupled to the wire winding housing 351, and wire passing-through holes 355 defined in the wire winding housing 351 to allow passing of the wire 340 therethrough. The both ends of the wire 340 may be fixed to both sides of the winding roll (not shown). The wire winding housing 351 may have a winding roll (not shown) received therein to wind the wire 340 around the same. The winding roll may be operatively coupled to the adjustment dial 353. The adjustment dial 353 may be operatively coupled to the winding roll such that the rotation of the adjustment dial 353 may affect or not the rotation of the winding roll depending on engagement or disengagement therebetween. In one embodiment, the user presses the adjustment dial 353 and thus tightly engages the adjustment dial 353 to the winding roll, and, then, rotates the adjustment dial 353 to rotate the winding roll to adjust the length of the wire. In this connection, the adjustment dial 353 may rotate continuously or step by step. The adjustment dial 353 may be configured to rotate not in the reverse direction but in the forward direction to suppress the free rotation of the winding roll. The forward rotation of the winding roll may lead to a reduction of the wire length.

[0048] When the user takes off the torso protector device 300, the user may pull the adjustment dial 353 to disengage the adjustment dial 353 from the winding roll. When the adjustment dial 353 is disengaged from the winding roll, the free rotation of the winding roll may be available. In other words, the winding roll may rotate in the reverse direction to increase the length of the wire 340. Thus, the user may take off the torso protector device 300.

[0049] The position of the wire adjuster module 350 may not be limited to the front face of the shoulder cover 320. For example, the wire adjuster module 350 may be disposed on the body 310 on the front face thereof, or may be disposed on the waist pad 320. A number of the wire adjuster module 35 may be singular or plural. For example, two wire adjuster modules 350 may be disposed on the body 310 on the front face thereof.

[0050] The screener 370 may have a hole 374 defined therein. The screener 370 may be length-stretchable. The screener 370 may have first attaching means 372 to be attached to second attachment means 322 on the shoulder cover 320. This screener 370 may be attached to or detached from the shoulder cover 320. The screener 370 may receive, at the hole 374 thereof, the wire adjuster module 350 when being attached to the shoulder cover 320. In this way, the screener 370 may screen entirely the wire 340. Alternatively, the screener 370 may be integrated with the torso protector device 300 for martial arts 300.

[0051] FIG. 4 is a perspective view of a kick target device 100 and a user wearing the torso protector device 200 for martial arts in accordance with one embodiment of the present disclosure. That is, FIG. 4 show a training system for martial arts.

[0052] The training system for martial arts may include the kick target device 100 and torso protector device 200 or 300.

[0053] The kick target device 100 may include a main body 110, and hit detectors 120 disposed on the main body 110. The hit detectors 120 may be configured to sense the hit

by the trainee. The kick target device 100 may include a display unit 160 connected to the hit detectors 120 for displaying the hit counts by the trainee. The main body 110 may include a base portion 112 on a ground and a target structure 114 extending vertically upwards from the base portion 112. The display unit 160 may be disposed on the base portion 112. The display unit 160 may be plural 161 and 163.

[0054] The hit detector 260 on the torso protector device 200 may be associated with the hit detectors 120 such that the distance between the user and the target structure 114 may be determined.

[0055] As for the training system for martial arts, the user may put on or take off the torso protector device 200 on his/her own, and the kick target device 200 may allow the user to check hit force and accuracy of her/his kick on his/her own.

[0056] The above description is not to be taken in a limiting sense, but is made merely for the purpose of describing the general principles of exemplary embodiments, and many additional embodiments of this disclosure are possible. It is understood that no limitation of the scope of the disclosure is thereby intended. The scope of the disclosure should be determined with reference to the Claims. Reference throughout this specification to “one embodiment,” “an embodiment,” or similar language means that a particular feature, structure, or characteristic that is described in connection with the embodiment is included in at least one embodiment of the present disclosure. Thus, appearances of the phrases “in one embodiment,” “in an embodiment,” and similar language throughout this specification may, but do not necessarily, all refer to the same embodiment.

What is claimed is:

1. A torso protector device for martial arts, the device comprising:

- a torso cover to protect a wearer's torso;
- left and right upper straps to connect left and right top portions of the torso cover to left and right middle portions of the torso cover or right and left middle portions of the torso cover respectively;
- a lower strap to connect left and right lower portions of the torso cover to each other;
- left and right upper wires to connect the left and right top portions of the torso cover to the left and right upper straps respectively;
- left and right lower wires to connect the left and right lower portions of the torso cover to the lower strap;
- left and right upper wire adjuster modules disposed at the left and right upper wires respectively; and
- left and right lower wire adjuster modules disposed at the left and right lower wires respectively,

wherein an adjustment dial is operatively coupled to each of the wire adjuster modules, wherein the rotation of the adjustment dial results in length increase or decrease of each of the wires.

2. The device of claim 1, wherein each of the left and right upper and lower wire adjuster modules: includes

- a wire winding housing in which each wire is wound;
- the adjustment dial rotatably coupled to the wire winding housing; and
- wire passing-through holes defined in the wire winding housing to allow passing of the wire therethrough.

3. The device of claim 2, wherein the wire winding housing has a winding roll received therein to wind the wire around roll.

4. The device of claim 3, wherein the adjustment dial is operatively coupled to the winding roll such that the rotation of the adjustment dial enable or disable the rotation of the winding roll depending on engagement or disengagement therebetween.

5. The device of claim 4, wherein when the adjustment dial is tightly engaged to the winding roll, the adjustment dial is configured to rotate not in a reverse direction but in a forward direction, wherein when the adjustment dial is disengaged from the winding roll, the adjustment dial is configured to rotate in a reverse direction or in a forward direction.

6. A torso protector device for martial arts, the device comprising:

a cylindrical torso protection body to protect a wearer's torso;

a shoulder cover coupled to the cylindrical torso protection body at front and rear portions thereof, wherein the shoulder cover has a neck opening defined in a top thereof, wherein left and right arm passing openings are defined in the shoulder cover in the left and right sides thereof respectively;

a wire coupled to the cylindrical torso protection body and the shoulder cover;

a wire adjuster module coupled to the wire; and

a screener to screen the wire,

wherein an adjustment dial is operatively coupled to the wire adjuster module, wherein the rotation of the adjustment dial results in length increase or decrease of the wire.

7. The device of claim 6, wherein the wire adjuster module: includes

a wire winding housing in which each wire is wound;

the adjustment dial rotatably coupled to the wire winding housing; and

wire passing-through holes defined in the wire winding housing to allow passing of the wire therethrough.

8. The device of claim 6, wherein connection rings are arranged in left and right columns on the cylindrical torso protection body on the front face thereof, wherein the wire passes through the connection rings between the left and right columns in a zigzag form.

9. A training set for martial arts, the system comprising:

a kick target device; and

the torso protector device according to claim 1,

wherein the kick target device includes a main body, and hit detectors disposed on the main body,

wherein the hit detectors is configured to sense a hit by a trainee,

wherein the kick target device includes a display unit connected to the hit detectors for displaying the hit counts by the trainee,

wherein the main body includes a base portion on a ground and a target structure extending vertically upwards from the base portion,

wherein the display unit is disposed on the base portion, wherein the hit detectors are disposed on the target structure.

* * * * *