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(54) **SPORTS TRAINING DEVICES AND METHODS FOR USING SAME**

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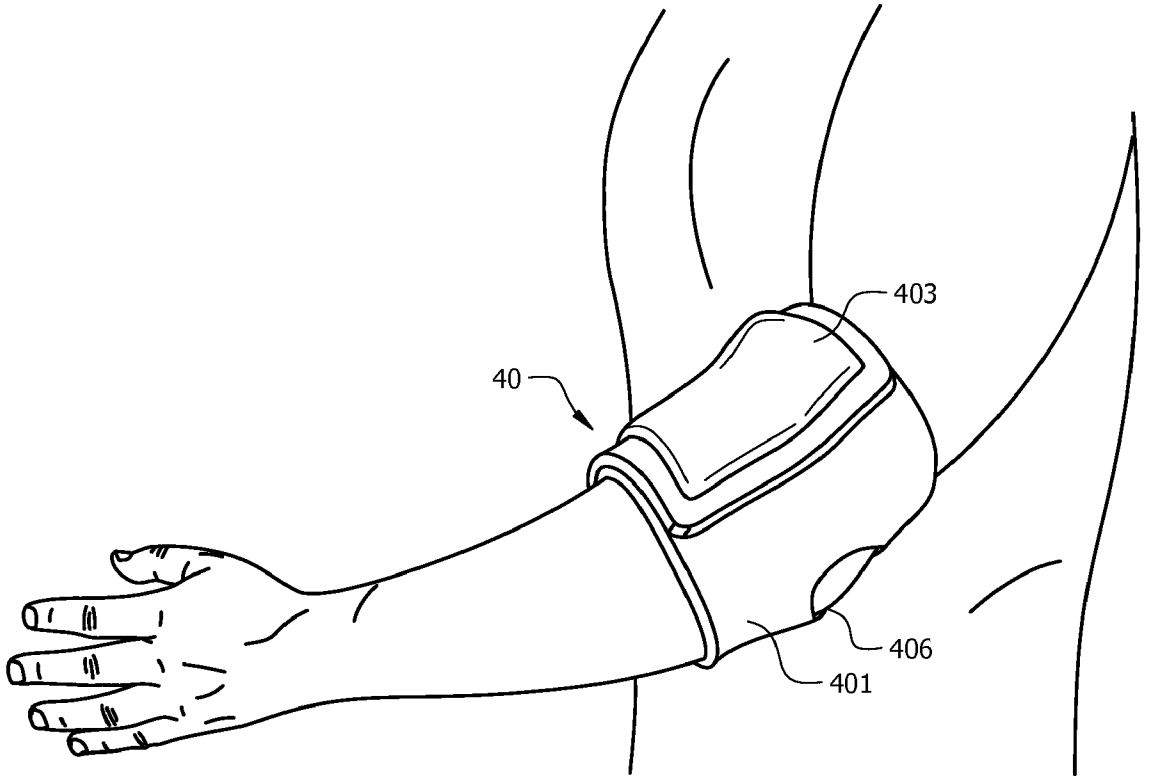
(57) **ABSTRACT**

A sports training device may be formed as a cuff that may be wrapped around a user's elbow. The cuff may be formed of a flexible material, such as neoprene, and may include a fastening mechanism, such as a hook-and-loop fastener, to close the cuff around the user's elbow. The sports training device may include an adjustable air bladder having a pump and a release valve. The adjustable air bladder may be positioned around the user's elbow and adjusted using the pump and valve mechanism such that air may be distributed within the sports training device. Accordingly, use of the device may avoid degrees of bending with respect to the user's elbow, such as when swinging a tennis racket.



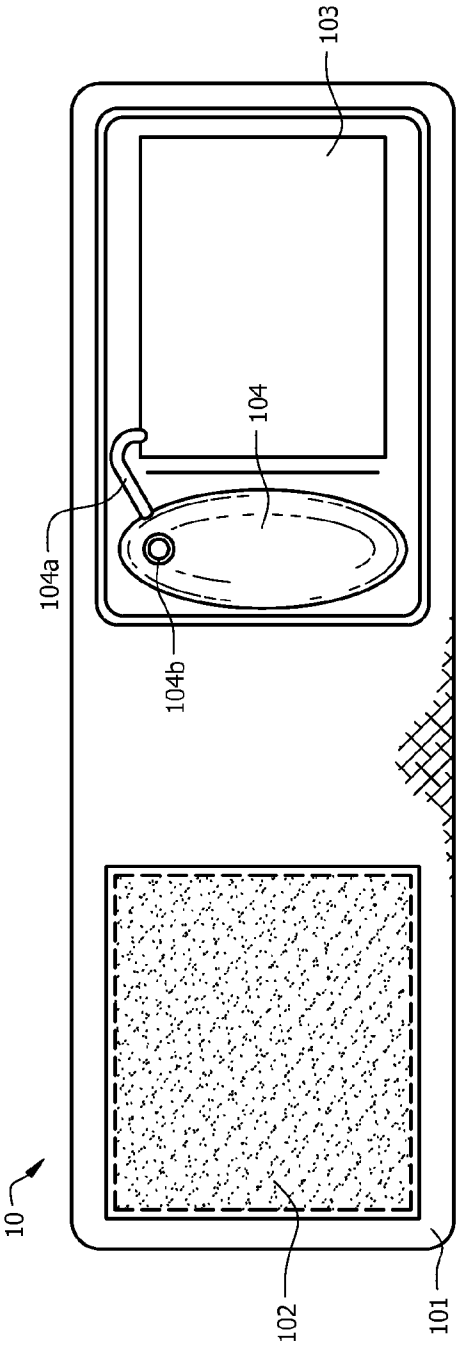


FIG. 1

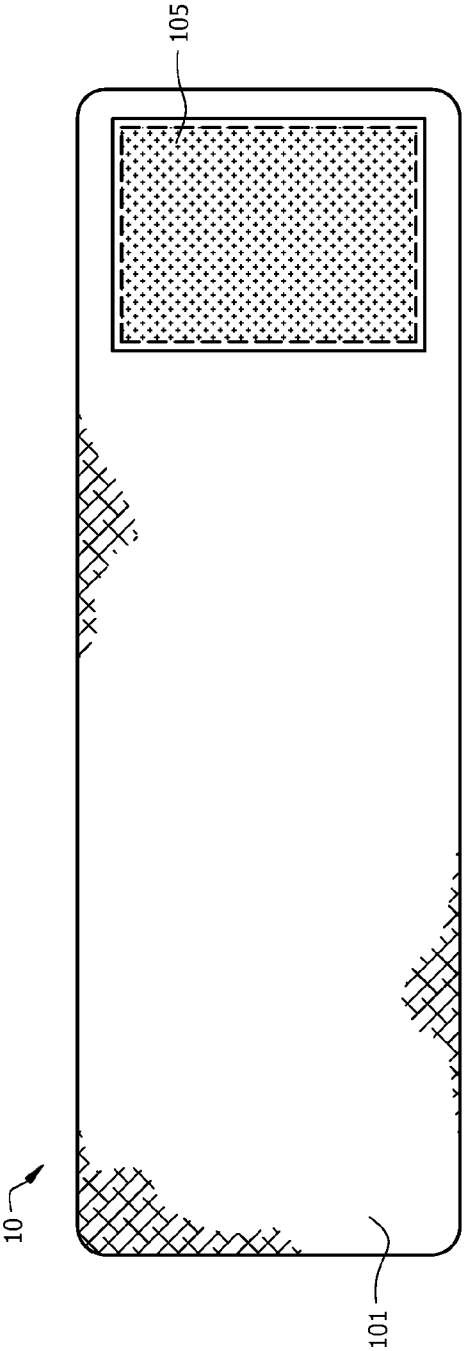


FIG. 2

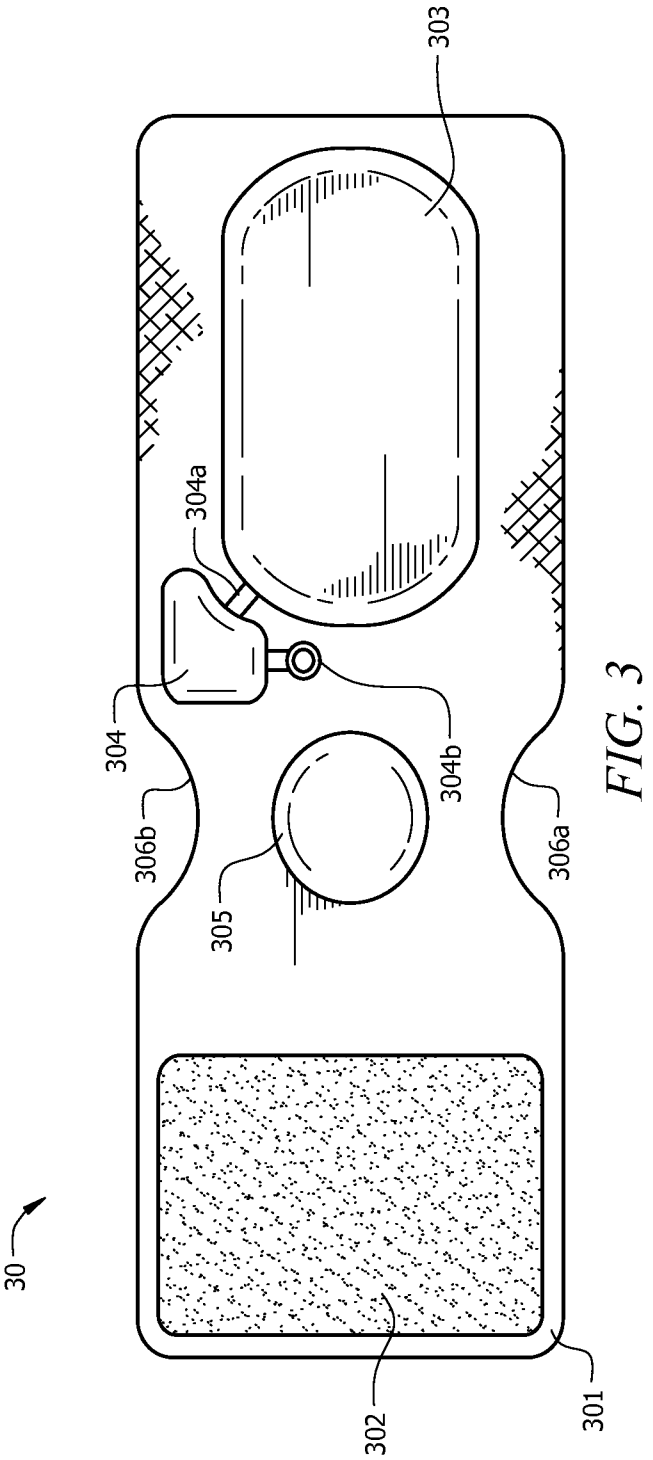


FIG. 3

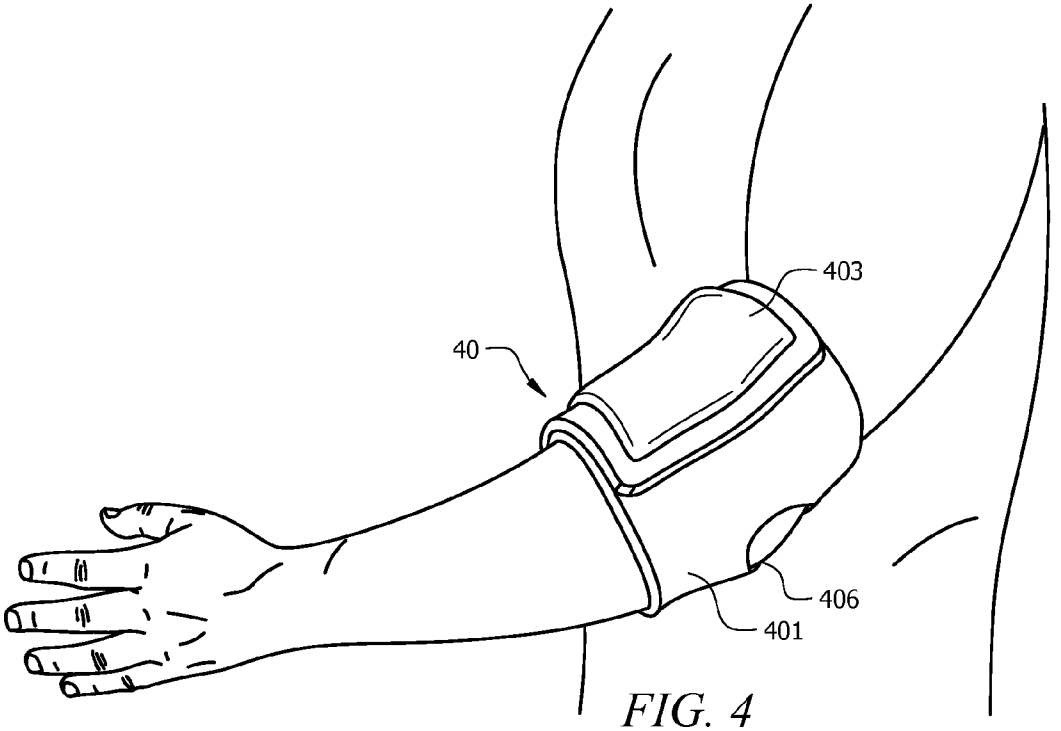


FIG. 4

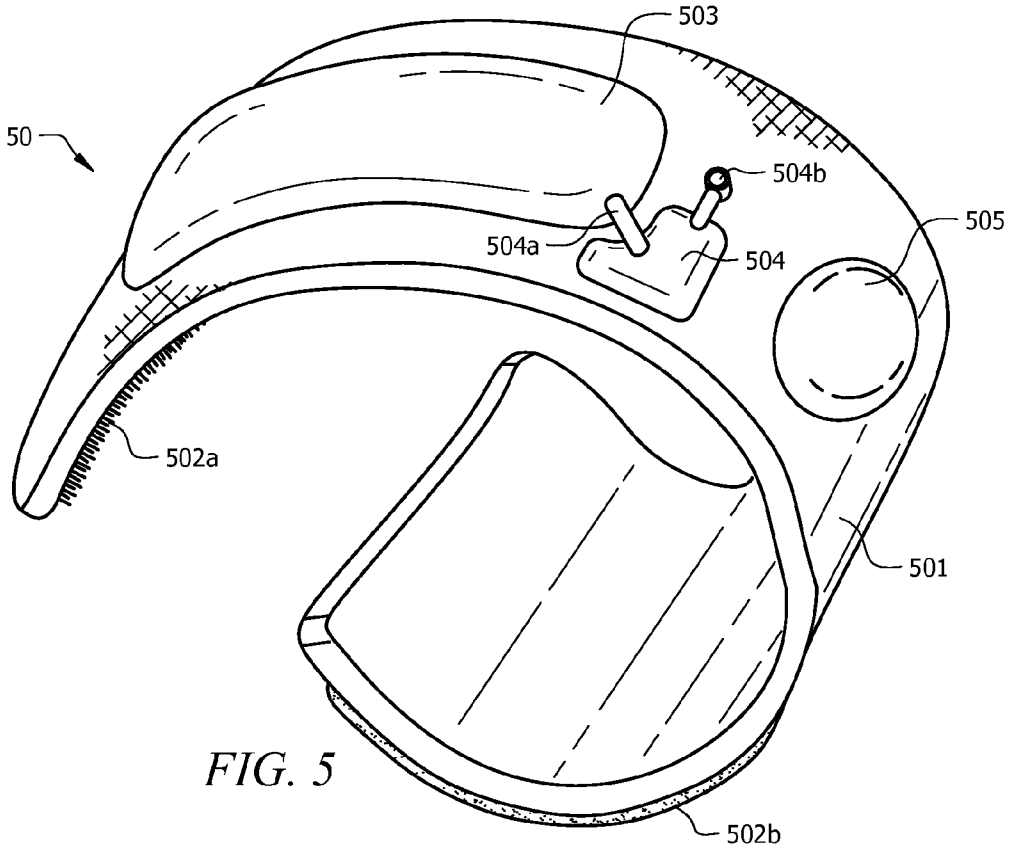


FIG. 5

SPORTS TRAINING DEVICES AND METHODS FOR USING SAME

FIELD OF THE DISCLOSURE

[0001] The present disclosure generally relates to sports training devices, and more particularly to sports training devices for improvement of swinging motion and methods for using same.

BACKGROUND

[0002] When someone is learning to play a sport, such as tennis, one of the more difficult things is to keep the user's arm straight at the appropriate times when he/she swings the tennis racket. A user might wear a brace to keep his/her arm straight, but the repetitive motion of swinging may cause pain in the user's arm or elbow over time. Further, different degrees of bending may still occur.

SUMMARY

[0003] Embodiments of the present disclosure may provide a sports training device worn around a user's elbow, the sports training device comprising a flexible material that wraps circumferentially around the user's elbow, an adjustable air bladder mounted to the flexible material and positioned at the elbow pit region of the user's elbow, a pump coupled to the adjustable air bladder, wherein the pump inflates the adjustable air bladder to restrict movement of the user's elbow at a constant variable. The sports training device also may include a release valve to reduce the inflation of the adjustable air bladder. The sports training device may further comprise a pocket integrally attached to the flexible material, the pocket housing the adjustable air bladder and the pump. The pocket may be releasably attached to the flexible material and house the adjustable air bladder and the pump. The flexible material may be selected from the group comprising neoprene, silicone elastomer, polyester, nylon, taslon, and combinations of the same. The flexible material also may comprise elastic. The sports training device may comprise a fastening mechanism to fasten one end of the flexible material to the other end of the flexible material around the user's elbow. This fastening mechanism may be a fabric hook-and-loop fastener. The sports training device may also include a release valve to reduce air pressure within the adjustable air bladder and loosen the position of the sports training device around the user's elbow. The adjustable air bladder may be coupled to the pump through a connector extending from the pump to the adjustable air bladder. The sports training device also may include a hole formed within the flexible material to receive the user's olecranon. The region of the flexible material around the hole may be curved to hug the user's bicep when the sports training device is secured around the user's elbow.

[0004] Other embodiments of the present disclosure may provide a method for using a sports training device, the method comprising wrapping the sports training device around a user's elbow region, the sports training device comprising a flexible material, an adjustable air bladder and a pump, wherein the sports training device may be wrapped to position the adjustable air bladder at the elbow pit of the user's elbow region, and applying pressure to the pump to inflate the adjustable air bladder, wherein the user's elbow region may be restricted in its movement when swinging. The method also may comprise using a release valve coupled to the adjustable air bladder to selectively reduce pressure within the adjustable air bladder.

[0005] Additional embodiments of the present disclosure may provide a sports swing teaching aid comprising a flexible material circumferentially disposed around a user's elbow in a cuff formation, the flexible material having a pocket positioned in the elbow pit region of the user's elbow that receives an adjustable air bladder, and a pump and valve mechanism coupled with the adjustable air bladder to selectively distribute air within the adjustable air bladder and limit degrees of bending of the user's elbow. The pocket may be integrally formed with the flexible material. The pocket also may be releasably attached to the flexible material. The sports swing teaching aid also may include a fastening mechanism to fasten one end of the flexible material to the other end of the flexible material around the user's elbow. The adjustable air bladder may be coupled to the pump through a connector extending from the pump to the adjustable air bladder. The sports swing teaching aid also may include a hole formed within the flexible material to receive the user's olecranon.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] For a more complete understanding of this disclosure, reference is now made to the following description, taken in conjunction with the accompanying drawings, in which:

[0007] FIG. **1** depicts an interior view of a sports training device according to an embodiment of the present disclosure;

[0008] FIG. **2** depicts an exterior view of the sports training device of FIG. **1** according to an embodiment of the present disclosure;

[0009] FIG. **3** depicts an interior view of another sports training device according to an embodiment of the present disclosure;

[0010] FIG. **4** depicts a sports training device when worn by a user according to an embodiment of the present disclosure; and

[0011] FIG. **5** depicts a perspective view of a sports training device according to an embodiment of the present disclosure.

DETAILED DESCRIPTION

[0012] A sports training device according to embodiments of the present disclosure may be formed as a cuff that may be wrapped around a user's elbow. The cuff may be formed of a flexible material, such as neoprene, and may include a fastening mechanism, such as a hook-and-loop fastener, to close the cuff around the user's elbow according to embodiments of the present disclosure. The sports training device may include an adjustable air bladder having a pump and a release valve. The adjustable air bladder may be positioned around the user's elbow and adjusted using the pump and valve mechanism such that air may be distributed within the sports training device. Accordingly, use of the device may avoid degrees of bending with respect to the user's elbow, such as when swinging a tennis racket.

[0013] FIG. **1** depicts an interior view of sports training device **10** according to an embodiment of the present disclosure. In an embodiment of the present disclosure, sports training device **10** may be comprised of flexible material **101**, fastening mechanism **102**, air bladder **103** and pump **104**. It should be appreciated that more or fewer components may be included as part of sports training device **10** without departing

from the present disclosure. Each of these components is described in more detail below.

[0014] Flexible material **101** may be formed of a flexible fabric or material that may be comfortably wrapped around a user's elbow, such as in a cuff formation, and a user may wear over an extended period of time when playing a sport, such as tennis, baseball or golf. Fabrics or materials forming flexible material **101** may include but are not limited to neoprene, silicone elastomer, polyester, nylon, taslon, and combinations thereof. In some embodiments of the present disclosure, flexible material **101** may incorporate a stretchy material, such as elastic, so that sports training device **10** may better conform to or be secured around the user's elbow. It should be appreciated that flexible material **101** may be formed as a strip wherein the ends are squared off according to embodiments of the present disclosure. In other embodiments of the present disclosure, the ends of flexible material **101** may be curved or otherwise shaped to accommodate whatever fastening mechanism that may be employed to secure sports training device **10** around a user's elbow.

[0015] Fastening mechanism **102** may comprise a fabric hook-and-loop fastener, such as Velcro, wherein fastening mechanism **102** may be joined with fastening mechanism **105** (depicted in FIG. **2** as part of the exterior view of sports training device **10** of FIG. **1**) with a first fastening mechanism **102** or **105** comprising one or more fabric strips with tiny hooks and the second fastening mechanism comprising one or more fabric strips with loops to receive the hooks from the first fastening mechanism so as to fasten/bind opposing ends of flexible material **101** together around the wearer's elbow. However, it should be appreciated that other mechanisms for fastening may be employed without departing from the present disclosure. In another embodiment of the present disclosure, flexible material **101** may be formed as a closed loop wherein no separate fastening mechanism may be employed insofar as flexible material **101** may include elastic or another material that may otherwise secure sports training device **10** around a user's elbow.

[0016] Adjustable air bladder **103** may be incorporated as part of sports training device **10** in embodiments of the present disclosure. In an embodiment of the present disclosure, adjustable air bladder **103** may be coupled to pump **104** through connector **104***a* extending from pump **104** to adjustable air bladder **103** such that a user may selectively inflate or deflate adjustable air bladder **103** using pump **104**. A user (or his/her trainer or coach) may depress pump **104** one or more times to slowly increase the air pressure within adjustable air bladder **103**, thereby further restricting movement of the user's elbow (i.e., reducing the degree of bend in the user's elbow). When the user follows through on his/her swing while wearing sports training device **10**, as the amount of air within air bladder **103** increases, the user's elbow may be better held in an extended range of motion position. Even as air is forced into air bladder **103**, sports training device **10** may place an amount of pressure on the user's elbow to restrict movement while minimizing or eliminating pain that the user might otherwise feel during a repetitive movement such as when swinging a tennis racket.

[0017] Release valve **104***b* may be included as part of sports training device **10** so that air pressure built up inside adjustable air bladder **103** may be released to loosen the hold of sports training device **10** around a user's elbow. Release valve **104***b* also may assist the user or trainer/coach to tell whether sports training device **10** is working properly. For example, a user may place his/her hand in front of release valve **104***b* and feel whether air is escaping from sports training device **10**.

[0018] It should be appreciated that there may be embodiments of the present disclosure wherein the adjustable air bladder and/or the pump may be housed within a bag or pocket that is sewn or otherwise attached to flexible material **101** forming sports training device **10**. This mechanism for housing the air bladder and/or pump may further streamline the design of a sports training device according to embodiments of the present disclosure. It should be appreciated that the bag or pocket may be resealable, such as through a zipper or other closure mechanism, so that a user may access the air bladder or pump for repair or other adjustment purposes without departing from the present disclosure. There also may be other embodiments of the present disclosure wherein the bag or pocket is unsealed or open (i.e., does not contain a separate closure mechanism). In a further embodiment of the present disclosure, the bag or pocket may be releasably attached to flexible material **101**, such as through snaps or a hook-and-loop fastener, such that the entire bag or pocket may be detached from flexible material **101** and replaced with another bag or pocket without departing from the present disclosure. This may be employed in instances where the air bladder and/or pump may be defective and it may be more efficient to replace the bag or pocket as well as its contents at one time. The bag or pocket may be formed of the same material as flexible material **101** according to embodiments of the present disclosure, but in other embodiments of the present disclosure, the bag or pocket may be formed of a stronger material to support the air bladder and/or pump such that they do not rip the bag or pocket open when sports training device **10** is fastened around a user's elbow and may be used for an extended period of time without damage.

[0019] FIG. **1** depicts adjustable air bladder **103** on an end of flexible material **101** opposite fastening mechanism **102**; however, it should be appreciated that adjustable air bladder **103** may be selectively positioned toward the center of sports training device **10** and closer in proximity to fastening mechanism **102** without departing from the present disclosure. Similarly, pump **104** is depicted as being positioned on the left hand side of adjustable air bladder **103**; however, it should be appreciated that pump **104** may be positioned in different places along the length of flexible material **101** with respect to adjustable air bladder **103** without departing from the present disclosure.

[0020] FIG. **2** depicts an exterior view of sports training device **10** of FIG. **1** according to an embodiment of the present disclosure. As previously discussed, fastening mechanism **105** may be positioned such that it may fasten or bind with fastening mechanism **102** positioned on the interior of sports training device **10** (see FIG. **1**). While fastening mechanism **105** is depicted as a portion of a hook-and-loop fastener, it should be appreciated that fastening mechanism **105** may be substituted with another fastening mechanism without departing from the present disclosure. Further, while not explicitly depicted in FIG. **2**, it should be appreciated that, when inflated, adjustable air bladder **103** may bulge and be visible in the exterior view of sports training device **10** depicted in FIG. **2**. Similarly, depending on the size and shape of pump **104**, pump **104** also may be visible in the exterior view of sports training device **10** according to embodiments of the present disclosure.

[0021] FIG. **3** depicts another interior view of sports training device **30** according to an embodiment of the present

disclosure. In this embodiment of the present disclosure, sports training device **30** may include flexible material **301** (similar to flexible material **101** described with respect to FIG. **1**) that may be wrapped around and secured to a user's elbow region. In this embodiment of the present disclosure, there may be hole **305** formed within flexible material **302** so that the user's olecranon (the bony prominence at the very tip of the elbow) may protrude out of flexible material **305** so as to make the olecranon less restricted and perhaps more comfortable for the user to wear sports training device **30**. In addition, a portion of flexible material **301** surrounding hole **305** may be curved and curved portions **306***a*, **306***b* may hug the user's bicep when sports training device **30** is secured around the user's elbow thereby reducing the amount of twisting of the user's arm when he/she is wearing sports training device **30**. Fastening mechanism **302** may be incorporated as part of sports training device **30** in a manner similar to that described with respect to fastening mechanism **102** of FIG. **1**. Further, pump **304** may connect to adjustable air bladder **303** via connection **304***a* in a manner similar to that described with respect to FIG. **1**. Pump **304** also may include release valve **304***b*; however, in this embodiment of the present disclosure, release valve **304***b* is coupled to pump **304** and is not formed as an integral part of pump **304** (as was release valve **104***b* as depicted in FIG. **1**). While release valves have been depicted in different manners in FIGS. **1-2**, it should be appreciated that there may be embodiments where there is no direct coupling or connection to pump **304**. As such, release valve **304** may be positioned in another area of sports training device **30** without departing from the present disclosure.

[0022] FIG. **4** depicts sports training device **40** when worn around a user's elbow according to an embodiment of the present disclosure. In this embodiment of the present disclosure, flexible material **401** may be secured around the user's elbow using a fastening mechanism, such as a fabric hook-and-loop fastener, as has been previously described. Hole **406** may be formed within flexible material **401** at so that the olecranon may protrude out of flexible material **401** during use. Adjustable air bladder **403** may then be positioned around the user's cubital fossa (also referred to as the elbow pit) in this embodiment of the present disclosure. However, as previously discussed, the positioning of adjustable air bladder **403** may be adjusted slightly with respect to the user's cubital fossa without departing from the present disclosure. In this embodiment of the present disclosure, the mechanism of fastening sports training device **40** around the user's elbow is not visible; however, it should be appreciated that fastening mechanisms as previously described with respect to FIGS. **1-2** may be employed without departing from the present disclosure. In other embodiments of the present disclosure, an elastic-type material may be incorporated into flexible material **401** such that the user may slide sports training device **40** onto his/her arm without the need for a fastening mechanism.

[0023] A user may hold a tennis racket in his/her hand while wearing sports training device **40**. The amount of air contained within adjustable air bladder **403** may be adjusted at a constant variable so that when the user swings the racket, his/her elbow may remain straight through the swinging motion. As the user becomes more adept at swinging the racket, the amount of air pressure provided through adjustable air bladder **403** may be gradually adjusted or decreased so that the user may eventually swing the tennis racket properly without the need for use of sports training device **40**.

[0024] FIG. **5** depicts a perspective view of sports training device **50** according to an embodiment of the present disclosure. In this embodiment of the present disclosure, adjustable air bladder **503** and pump **504** are depicted as being positioned away from the user's elbow when the user is wearing sports training device **50**. As such, the user's trainer or coach may more easily access pump **504** connected to adjustable air bladder **504***a* to make changes to the pressure being applied to the user's elbow. Further, in this embodiment of the present disclosure, sports training device **50** may include release valve **504***b* that may be coupled to pump **504**. However, as previously discussed, there may be embodiments wherein the release valve is formed as part of the pump or may not be directly coupled to the pump without departing from the present disclosure. Flexible material **501** is depicted in this embodiment of the present disclosure as a cuff having hole **505** to receive the user's olecranon when sports training device **50** is being worn. However, it should be appreciated that there may be other embodiments wherein no hole may be included. Flexible material **501** may include fastening mechanism **502***a*, **502***b* formed as a hook-and-loop fastener in this embodiment of the present disclosure. However, as previously discussed, other fastening mechanism may be employed to join the ends of flexible material **501** without departing from the present disclosure.

[0025] While embodiments of the present disclosure have been described as being directed to sports training devices for use in helping a user develop his/her tennis swing or follow-through, it should be appreciated that these sports training devices may be utilized with respect to other sports. For example, a user may employ a sports training device to assist with developing his/her swing in sports including but not limited to golf or baseball.

[0026] Further, it should be appreciated that sports training devices according to embodiments of the present disclosure may be formed so that a user may perform self-adjustments when practicing his/her swinging motion. However, there may be other embodiments of the present disclosure wherein the user is being trained or coached in the sport. As such, devices according to embodiments of the present disclosure may be formed so that the trainer/coach may apply pressure to the pump or access the release valve to adjust the amount of air contained within the adjustable air bladder while training or coaching the user.

[0027] Although the present disclosure and its advantages have been described in detail, it should be understood that various changes, substitutions and alterations can be made herein without departing from the spirit and scope of the disclosure as defined by the appended claims. Moreover, the scope of the present application is not intended to be limited to the particular embodiments of the process, machine, manufacture, composition of matter, means, methods and steps described in the specification. As one of ordinary skill in the art will readily appreciate from the disclosure, processes, machines, manufacture, compositions of matter, means, methods, or steps, presently existing or later to be developed that perform substantially the same function or achieve substantially the same result as the corresponding embodiments described herein may be utilized according to the present disclosure. Accordingly, the appended claims are intended to include within their scope such processes, machines, manufacture, compositions of matter, means, methods, or steps.

1. A sports training device worn around a user's elbow, the sports training device comprising:

a flexible material that wraps circumferentially around the user's elbow;

an adjustable air bladder mounted to the flexible material and positioned at the elbow pit region of the user's elbow; and

a pump coupled to the adjustable air bladder, wherein the pump inflates the adjustable air bladder to restrict movement of the user's elbow at a constant variable.

2. The sports training device of claim **1** further comprising:

a release valve to reduce the inflation of the adjustable air bladder.

3. The sports training device of claim **1** further comprising:

a pocket integrally attached to the flexible material, the pocket housing the adjustable air bladder and the pump.

4. The sports training device of claim **1** further comprising:

a pocket releasably attached to the flexible material, the pocket housing the adjustable air bladder and the pump.

5. The sports training device of claim **1** wherein the flexible material is selected from the group comprising:

neoprene, silicone elastomer, polyester, nylon, taslon, and combinations of the same.

6. The sports training device of claim **5** wherein the flexible material further comprises elastic.

7. The sports training device of claim **1** further comprising:

a fastening mechanism to fasten one end of the flexible material to the other end of the flexible material around the user's elbow.

8. The sports training device of claim **7** wherein the fastening mechanism is a fabric hook-and-loop fastener.

9. The sports training device of claim **1** further comprising:

a release valve to reduce air pressure within the adjustable air bladder and loosen the position of the sports training device around the user's elbow.

10. The sports training device of claim **1** wherein the adjustable air bladder is coupled to the pump through a connector extending from the pump to the adjustable air bladder.

11. The sports training device of claim **1** further comprising:

a hole formed within the flexible material to receive the user's olecranon.

12. The sports training device of claim **12** wherein the region of the flexible material around the hole is curved to hug the user's bicep when the sports training device is secured around the user's elbow.

13. A method for using a sports training device, the method comprising:

wrapping the sports training device around a user's elbow region, the sports training device comprising a flexible material, an adjustable air bladder and a pump, wherein the sports training device is wrapped to position the adjustable air bladder at the elbow pit of the user's elbow region; and

applying pressure to the pump to inflate the adjustable air bladder, wherein the user's elbow region is restricted in its movement when swinging.

14. The method of claim **9**, further comprising:

using a release valve coupled to the adjustable air bladder to selectively reduce pressure within the adjustable air bladder.

15. A sports swing teaching aid comprising:

a flexible material circumferentially disposed around a user's elbow in a cuff formation, the flexible material having a pocket positioned in the elbow pit region of the user's elbow that receives an adjustable air bladder; and

a pump and valve mechanism coupled with the adjustable air bladder to selectively distribute air within the adjustable air bladder and limit degrees of bending of the user's elbow.

16. The sports swing teaching aid of claim **15** wherein the pocket is integrally formed with the flexible material.

17. The sports swing teaching aid of claim **15** wherein the pocket is releasably attached to the flexible material.

18. The sports swing teaching aid of claim **15** further comprising:

a fastening mechanism to fasten one end of the flexible material to the other end of the flexible material around the user's elbow.

19. The sports swing teaching aid of claim **15** wherein the adjustable air bladder is coupled to the pump through a connector extending from the pump to the adjustable air bladder.

20. The sports training device of claim **15** further comprising:

a hole formed within the flexible material to receive the user's olecranon.

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