ABSTRACT
A sleeve for use by baseball or softball pitchers is provided. The sleeve covers the entirety of the arm and shoulder and is easily slipped on and off. Pitchers can thereby keep their pitching arm warm by wearing the sleeve between innings. Alternatively, pockets or other securing means are provided whereby a wearer can add a heating or cooling pad or bag so that the arm can be warmed or cooled. The sleeve is also useful for purposes other than keeping a pitching arm warm. For example, an arm that is sore from muscle strain or after an operation can be cooled by using cold packs in the sleeve so that swelling is minimized.
FIG. 4B
SLEEVE FOR WARMING OR COOLING AN ARM

FIELD OF THE INVENTION

[0001] This invention is directed to a sleeve for use by a person wishing to warm or cool their arm. More particularly, the invention is a sleeve that is easily put on and taken off, for example by baseball and softball pitchers to keep their pitching arm warm between innings.

BACKGROUND OF THE INVENTION

[0002] For many years, it has been known that pitchers in softball or baseball games need to keep their pitching arm warm between innings, otherwise they risk injury. In between innings, a pitcher’s arm temperature can cool rapidly, only to undergo the stress of pitching again once the muscles have contracted due to the cooling effect. This is why major league pitchers are commonly observed on television wearing a jacket in between innings, even in the middle of summer. When the arm cools down and the pitcher pitches with a cold arm, injury can result. Pitching injuries range from muscle soreness and strain to more serious conditions such as tendinitis, bone chips, ligament damage, and joint damage.

[0003] In contrast, when the baseball or softball game is over, it is desirable to cool the pitching arm down—this stops the microbleeding in the muscle tissue of the arm associated with muscle strain. Pitches can use ice packs or cold packs to cool their pitching arm after the game is finished.

[0004] In the past, pitchers often would layer towels on their pitching arm to keep it warm. Additionally, as is mentioned above, pitchers are often observed wearing a baseball jacket between innings, even in very hot weather. Towels suffer from the drawback of being insecurely placed, such that they slip off with even slight movement of the body. Wearing a jacket between innings can also be problematic when it is hot outside, causing the pitcher to overheat between innings.

[0005] Baseball and softball are not the only sports wherein it is desirable to keep the arm warm. It can be desirable, for example, for a tennis player, a hockey player, a bowler, a golfer, or a player of some other sport wherein the arms are actively employed in playing the game to keep an arm warm during periods between sets, matches, plays, rounds, innings, holes, or games to maintain performance level and/or to prevent arm injuries when the arm is called upon after a period of relative inactivity.

[0006] More recently, some effort has been made to remedy the need to keep a pitching arm warm between innings without necessitating the use of towels, which are inconvenient if the person is moving about, or the use of a baseball jacket, which can be too hot to wear on very warm days. For example, a product sold under the name Relief Sleeve® is essentially the sleeve of a baseball jacket that covers part of the torso and fastens by wrapping around the torso and attaching on the side of the torso opposite the sleeve. Additionally, a product sold under the name “The Heater®” pitching sleeve is a battery powered warming device that is a half-jacket, secured by a strap around the torso.

[0007] Both these devices cover substantially more than just the arm and both extend to cover part or at least half of the torso at and above waist level. Both require straps or other fastening means around the waist area to secure the sleeve on the arm. Covering the torso can be a disadvantage of the devices, particularly for baseball or softball pitchers that play outside and can become overheated in warm temperatures. Additionally, the straps and other means to fasten these devices are relatively complicated.

[0008] Aside from uses associated with sports, there are additional reasons why heat or cold can be desirably applied to an arm. Muscle strain, muscle pull, or muscle tear implies damage to a muscle or its attaching tendons. Often, undue pressure is put on muscles during the course of normal daily activities, with sudden, quick heavy lifting, or while performing work tasks. Muscle damage can be in the form of tearing (part or all) of the muscle fibers and the tendons attached to the muscle. The tearing of the muscle can also damage small blood vessels, causing local bleeding (bruising) and pain (caused by irritation of the nerve endings in the area). It can be desirable to cool the injured arm to avoid undue swelling and stop microbleeding in such circumstances. Further, if an arm has been operated on, it can be advantageous to cool the arm to prevent swelling. Additionally, arthritis causes sore and swollen joints that can be soothed by heat or cold. Repetitive motion injuries to the arm can be soothed by application of cooling or heating devices. Other reasons can be envisioned wherein it would be advantageous to supply a pinpointed or generalized means to either heat or cool an arm.

[0009] There is a need for a sleeve that is easily slipped on and off without engaging more than just the arm, to provide for maximum convenience, ease, and speed of use. There is a further need for a sleeve that is easily secured to cover the arm. There is further a need for a sleeve that covers essentially only an arm but is securely placed to cover essentially only an arm, extending up to or over the shoulder. There is a further need in both the sports industry and the medical device industry to provide a means to both warm and cool an arm as the need arises.

SUMMARY OF THE INVENTION

[0010] The invention is directed to a device that covers most or all of an arm, up to the top of the shoulder joint. The device comprises a sleeve that is not part of a jacket, sweater, or other article of clothing that covers more than the arm. The device can be held in place by a feature such as a clip, a hook-and-loop system, or a drawstring. Alternatively, the device can be held in place by a nonmechanical feature such as weights, removable adhesive, or a high friction rubber strip. The sleeve can be made from any woven or nonwoven fabric material, and can be made from more than one layer of a fabric. The device can have a cuff and can be decorated, printed, etc. to match a sports uniform. The device can have pouches or pockets to hold hot packs, cold packs, and optionally other items such as drink bottles, mp3 players, and the like.

[0011] The device facilitates ease of wearing, fastening, and removing the device and further facilitates both cooling and warming an arm as the need arises.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] FIG. 1 is a perspective view of a first embodiment of a device according to the invention.

[0013] FIG. 2 is a perspective view of a second embodiment of a device according to the invention.

[0014] FIG. 3 is a perspective view of a third embodiment of a device according to the invention.
FIG. 4A is a perspective view of a fourth embodiment of a device according to the invention.

FIG. 4B is an enlarged view of a portion of the embodiment of FIG. 4A.

DETAILED DESCRIPTION OF THE INVENTION

The invention is drawn to a device that covers an arm, the device comprising a sleeve extending around the arm and comprising a fabric, wherein no part of the device extends past the shoulder. In some embodiments the device has a feature to prevent the device from slipping off, wherein the feature is situated at or below the shoulder. In other embodiments, the device preferably covers the entirety of the shoulder and is secured on, or near, the shoulder when the device is worn. In other embodiments it may be preferable to provide coverage only up to the top of the bicep, or beneath the shoulder, wherein the device has a feature to prevent slipping off that is situated above the bicep when the device is worn.

An embodiment of the invention is shown in FIG. 1. Device 100 has a fabric sleeve 110 extending around the arm, wherein the sleeve has a top 120 and a bottom 130. The device covers the arm from the wrist to the shoulder of the wearer but does not extend past the shoulder. As seen in FIG. 1, device 100 is configured to have a wearer's arm extend therethrough.

Device 100 of the invention comprises a sleeve 110. The sleeve can be made to fit an adult or a child; it can be made in a range of sizes that correspond to, for example, traditional men's, women's, or children's sizing protocols such as "small", "medium", and "large" or "size 4" or "Men's 10-12." Sleeve 110 can be made from any number of fabrics and is not limited to choice of materials from which to make the sleeve. For example, the sleeve can be made from cotton, polyester, polyolefin, wool, satin, acetate, silk, or a combination thereof. Any fabric generally suitable for use in a garment can be used to make the sleeve of the invention. Preferably, the sleeve is made from a sweatshirt style fabric, a fleece style fabric, such as Polartec® fabric, a knit jersey fabric such as a polo shirt fabric, a terrycloth type fabric, a microfiber fabric (i.e. a fabric with fibers of less than 1 denier), or a combination thereof.

Sleeve 110 can be made of more than one layer of fabric. For example, it may be desirable to have a smooth, decorative satin exterior fabric layer with a soft fleece or microfiber interior layer that contacts the skin. Or it may be desirable to provide a waterproof fabric, such as Gore-Tex®, that is breathable but prevents water encroachment from the outside, with a warm cotton or wool interior layer.

Sleeve 110 can also be made from a nonwoven fabric. Nonwoven fabrics are those made typically by meltblowing, spunbonding, electrospinning, and the like. Such techniques are well known in the prior art. The nonwoven may be made from polyethylene, polypropylene, or another olefinic material, or it can be made from another synthetic or natural polymer such as cellulose. Nonwoven fabrics are inexpensive and can be advantageously used, for example, as a disposable embodiment of the sleeve of the invention. In such an embodiment, there can further be two layers of material. For example, an interior layer can comprise an absorptive batting for absorbing body fluids such as blood or pus. In other embodiments, a disposable nonwoven layer can be removably added underneath a woven fabric layer, for example a cotton layer, such that the nonwoven layer can be easily removed and replaced but the cotton layer remains intact.

In some embodiments, device 100 can be easily stored. For example, it may be easily rolled up into a roughly cylindrical shape and tucked into a carry bag or pouch, or into a standard sized jacket or pants pocket. The size of the sleeve when rolled up can depend on the size of the sleeve, the fabric or fabrics used to make sleeve 110, and other items incorporated into device 100.

In some embodiments, device 100 can have a cuff. The cuff can be made using any conventional means and materials from which cuffs are traditionally made. Thus, the cuff may be made by an elastic strip, such as is commonly seen in baseball jackets or sweatshirts. It can be formed from a fabric strip such as in a traditional button-down shirt or jacket, and thus can further have a button, snap, clip, buckle, cuff link, and the like to fasten the cuff. The cuff can also have, in some embodiments, a drawstring or a hook and loop type closure. Any combination of cuff elements known to those of skill can be employed as part of device 100.

Device 100 can have a further treatment to enhance any number of physical properties of the device. For example, the device can be render waterproof or water resistant by treating with silicone or fluorocarbon materials. The device can be made soil resistant by treating with anti-soiling polymers such as phenol formaldehyde polymers or methacrylic acid based polymers, or by treating with a silicone sol. The device can also be treated with an antimicrobial material to retard microbial growth. Such a treatment may be especially desirable where multiple users wear the sleeve. The device can also be treated to be resistant to ultraviolet radiation and thereby prevent color fading of the sleeve fabric when exposed to light. The treatment can be a fabric softening agent or a flame retardant agent. Finally, the device can be treated, especially where the sleeve can contact the underarm during use, with an antiperspirant or an absorbative material that absorbs odors.

Any treatment can be added to the fabric prior to forming device 100, or applied to the entire device or only part of the device after the device is formed. A treatment can be applied by, for example, spraying, dipping, steaming, roll coating, and the like. Any number of methods of applying treatments, that are known in the art and are used by manufacturers and/or consumers, can generally be used to treat the device or just the fabric of the sleeve. No particular limitations exist on the material used to treat the device or the method of applying the materials to the device.

Device 100 can be secured to the wearer by a fastening feature. The feature can be, for example, a strip of hooks, a clip, a clamp, one or more straps, a buckle, a drawstring, an elastic strip, a friction strip, an adhesive strip, a weight, or a combination thereof. For example, the hook portion of a hook and loop type fastener, such as Velcro® fastener hooks, could be enough to fasten the sleeve to many shirt fabrics. Alternatively, a wearer could affix a strip of Velcro® fastener loops, for example, to his or her shirt for the purpose of mating the shirt to the device having a feature that is a strip of fastener hooks. One or more clips, employing e.g. hinged jaws with a spring to urge the jaws together, may be attached to the device directly, or by a further strap, and configured to clamp onto the wearer's shirt. In other embodiments, a strap may be attached to the device such that tightening the strap by use of a buckle or by tying the strap serves to fasten the device around the arm. In other embodiments, a drawstring such as is typically used in a hooded sweatshirt can be used to fasten the device to the wearer. An elastic strip,
for example a one inch wide elastic, could be attached to a part 
or the entire top opening of the device such that it is stretched 
to slip on and contracts to hold the device in place over the top 
of the shoulder or at the top of the bicep. In yet other embodi-
ments, a high friction rubber strip can be attached mechan-
ically, such as by sewing, that enables the device to stay on top 
of the shoulder without slipping off. Alternatively, a rubber 
can be applied by a coating method, such as hot melt coating 
or solution coating, to provide a layer of rubber at the top of 
the device. In yet other embodiments, a weighted strip, such 
as a strip of flexible metal or a pouch full of weight beads, 
can be fastened at the top of the device to hold the sleeve in place 
over the top of the shoulder. Finally, a low-tack adhesive that 
is removable without residue, can be coated or otherwise 
affixed to the top of the device to prevent it from slipping off 
the top of the shoulder or the top of the bicep. Such a remov-
able adhesive is demonstrated in e.g. Post-It® note adhesive, 
although more aggressive adhesive may be required to 

In a preferred embodiment, device 100 of the invention 
has one or more pockets or pouches situated on sleeve 110. 
The pockets can have a flap or another type of closure, 
and the closure can further be secured with snaps, clips, 
buttons, zippers, and the like. The pockets can be substi-
tially formed inside the sleeve or may be patch type pockets 
formed by a patch of fabric situated on top of the sleeve. 
The pockets can be advantageously sized or modified to hold 
various items. For example, typical hot or cold packs can be 
several inches square or rectangular; a similarly sized and 
shaped pocket could hold a pack that is heated by chemical 
reaction, microwave heat, or both; or a pack that is cooled by 
refrigeration. The pack can also be a homemade pack, such as 
a plastic bag encasing frozen peas or ice cubes, or a hot water 
bottle filled with hot tap water or a potato heated in a micro-
wave oven.

In some embodiments, the pockets to hold hot or 
cold packs are advantageously situated so that, when the 
device is worn, the pockets lay on top of muscle groups or 
combinations of muscle groups; alternatively, a pocket might 
be situated to cover one or more joints or tendons of the arm. 
For example, muscle strain may exist in the deltoid, biceps, 
triceps, brachialis, lateral epicondyle, brachioradialis, or the 
wrist-finger extension muscles, or, for example, a combina-
tion of the deltoid and brachioradialis, or a combination of the 
bicep and extension muscles, or a combination of the bicep 
and tricep muscles. There is no particular limitation as to 
the size or shape of the pockets, so a pocket or combination 
of pockets can be fashioned to cover any muscle group, combi-
nation of muscle groups, any joint, any tendon, or combina-
tion of joints and/or tendons of the arm and shoulder.

Depending on the application, the most desirable 
location for pockets to hold hot or cold packs can differ. If the 
device is for use by a pitcher, the muscles that must stay warm 
would benefit the most from having a pocket for a hot pack 
therein. For example, a pitcher’s sleeve may advantageously 
hold hot packs near the deltoid, biceps, brachialis, or brachio-
radialis. One suffering from tendonitis can use a sleeve hav-
ing a pocket situated on top of the afflicted tendon for either 
heating or cooling. After surgery on the elbow joint, it may be 
more advantageous to hold cold packs over and near the 
elbow joint to minimize swelling. If arthritis affects the shoul-
der or wrist joints, it may be advantageous to have a hot pack 
or a cold pack near the affected joint for soothing relief.

In some embodiments, it may be advantageous to 
use hook and loop attachment, such as by the use of Velcro® 
fastening systems, by making the inner layer of the sleeve 110 
of device 100 from a layer of the “loop” type material, or by 
addition of multiple strips of loops to the inner surface of the 
sleeve of the device, and providing absorbent articles having 
“hook” type structures attached to part of the hot or cold pack. 
In this way, heat or cold can be added wherever the user needs 
it. In such embodiments, the need to have a pouch or pocket 
for the hot or cold pack is obviated. The user simply deter-
mines where the heat or cold is needed and applies the hot or 
cold pack to the sleeve such that heat or cold is applied to the 
desired location when the sleeve is worn. Simple pressure 
causes the hook and loop fastener to engage, securing the hot 
or cold pack firmly in place.

The pockets can further have mechanisms to secure 
the contents therein. The mechanisms to secure items such as 
a hot or cold pack in the pockets can be any conventional 
means known in the art. For example, straps, elastic bands, 
clips, flaps, buckles, hook and loop mating systems, and the 
like as well as combinations of these mechanisms can be used 
to protect the contents of the pocket and/or keep the contents 
from coming out of the pocket.

The use of pockets in device 100 of the invention 
can be extended to include one or more items that people may 
desire to carry with them. For example, a cell phone, a set of 
keys, an identification card, a bottle to hold a beverage, a 
pocket radio, a compact disc player, or an mp3 player can be 
items people may wish to carry with them. The pockets may, 
in some cases, be designed with a particular item in mind. For 
example, if the pocket is to hold an identification card, the 
pocket may be locked or zipped for security. If the pocket is 
to hold an mp3 player, the pocket may be fitted with an 
opening through which an earphone cord can be threaded, and 
may additionally have a means to secure the mp3 player 
within the pocket to prevent bouncing or shifting.

Device 100 of the invention can further have an 
absorbent material present disposed within sleeve 110. For 
example, a disposable absorbent batting can be affixed to the 
interior of the sleeve that contacts the wearer. The absorbent 
article can be used to absorb odors, waterbased liquids, or 
both. The absorbent article can be, for example, an underarm 
shield or a bandage type article. In such an embodiment, the 
article can be removably attached to the sleeve such that it 
contacts the underarm of the wearer when the sleeve is worn. 
The absorbent article in such an embodiment could absorb 
underarm odor, moisture, or both. In other embodiments, it 
may be desirable to provide an absorbent article disposed near 
a wound, or the site of an operation, to absorb blood, pus, and 
the like. In such embodiments, the device itself can be made 
from absorbent materials, or an absorbent article could be 
removably situated inside the sleeve of the device such that 
the absorbent article contacts the skin when the sleeve is 
worn. In some embodiments, it can be advantageous to use 
hook and loop attachment, such as by the use of Velcro® 
fastening systems, by making the inner layer of the sleeve 
from the “loop” type material, or by addition of multiple 
strips of loops to the inner surface of the sleeve, and providing 
absorbent articles having “hook” type structures attached to 
part of the absorbent article. In this way, the absorbent can be 
added wherever the user needs it.

“Absorbent material” refers to any materials having 
fluid absorption properties. Although an absorbent layer or 
layers in many absorbent articles may only contain absorbent
fibers such as rayon, cotton, or cellulose fluff fiber, others may contain superabsorbent polymer particles composed of, for example, crosslinked sodium polyacrylate. More sophisticated absorbent layers can also contain fibers, filaments or like materials comprising polyolefin. Other materials can be, for example, pulp, superabsorbent particles or other like particles, a natural polymer, for example, rayon or cotton fibers, a synthetic polymer, or combinations thereof, for example, polypropylene or polyester fibers, which fibers may be of staple length. These processes and materials are further described in Lau, U.S. Pat. No. 4,818,464, and Anderson, et al., U.S. Pat. No. 4,100,324. In still other absorbent materials, bicomponent fibers of, for example, a polyethylene sheath and a polyester, or polypropylene core can be used to thermally bond, for example, fluff fiber and superabsorbent particles together as practiced in, for example, Erspermer, et al., U.S. Pat. No. 6,559,081 and Chimeiski, U.S. Pat. No. 6,632,209.

[0036] The absorbent material is not limited as to type, shape, thickness, or any other dimension and is not particularly limited as to the type absorbent material. In general, any absorbent material suitable for a given application can be used. The absorbent material can be incorporated into an absorbent article that further has, for example, a covering layer, such as a porous layer of woven cotton, nonwoven polyolefin, or the like. If the absorbent is odor absorbent, it can employ activated carbon particles, odor-reactive materials such as salts known to react with molecules that have an objectionable odor, or cycloextrin.

[0037] Device 100 of the invention can further be made attractive, if desired, by addition of dyes or pigments over the entirety of the device 100, designs or inicia on part or all of the sleeve 110 that can be formed via decorative appliqués, beads, sequins, embroidery, or any other aesthetically pleasing or functional items on device 100. For example, it may be desirable to have the sleeve match or coordinate with a sports uniform, for example, a baseball team uniform. Thus, the sleeve could be made with an outer shell of dyed satin, with a uniform number appliqué attached to identify the person who owns the sleeve. The sleeve can further have the logo of the sports team printed, embroidered, or appliquéd on any part of the sleeve. Alternatively, the sleeve can be printed with a striped pattern and embroidered with a name, a number, or the like. No particular limitations exist on the method of decoration of the sleeve or the materials used to decorate the sleeve.

[0038] Referring to the drawings, Fig. 2 illustrates an embodiment of the invention. In Fig. 2, a device 200 on an arm of a wearer, has a sleeve 210 having an interior 212 and exterior 214, a top 216 and a bottom 218 that extend generally from the wearer's wrist to the shoulder. The wearer's arm passes through interior 212 and extends from top 216 to bottom 218. In this embodiment, sleeve 210 is secured to the top of the shoulder of the wearer. On the interior 212 and situated at the top 216 of sleeve 210 is attached a strip 220. Strip 220 is made of a high friction rubber 222 to hold device 200 over the top of the shoulder. In other embodiments strip 220 could be a weighted strip or a low-tack adhesive that enables device 200 to be easily attached and removed without leaving marks. Sleeve 210 has pockets 230 that can hold a pack 240 that can be a hot pack or a cold pack, for example a gel pack that can be frozen or heated as the user requires. In this embodiment, pockets 230 are situated substantially on the interior 212 of sleeve 210, such that only a pocket opening 232 is visible on the exterior 214 when the device 200 is worn.
the invention can be made without departing from the spirit and scope of the invention, the invention resides in the claims hereinafter appended.

What is claimed is:

1. A device that slips on an arm to cover the arm and at least a portion of the shoulder, comprising a fabric sleeve, wherein the device does not extend past the shoulder.

2. The device of claim 1 further comprising a fastening feature to prevent the device from sliding off the arm.

3. The device of claim 2 wherein the fastening feature comprises a strip of hooks, one or more clips, one or more straps, one or more buckles, a drawstring, an elastic strip, a friction strip, an adhesive strip, a weight, or a combination thereof.

4. The device of claim 3 wherein the fastening feature is situated above the bicep when the device is worn.

5. The device of claim 3 wherein the fastening feature is situated on or near the shoulder.

6. The device of claim 1 further comprising a cuff comprising an elastic strip, a drawstring, a snap, a button, a clip, a strap, a strip of fabric, a hook and loop type closure, or a combination thereof.

7. The device of claim 1 comprising one or more pockets.

8. The device of claim 7 wherein the one or more pockets is configured to hold a cold pack, a hot pack, a music player, a cell phone, a wallet, an identification card, a credit card, cash, a beverage bottle, or a radio.

9. The device of claim 1 wherein the sleeve has an interior and an exterior, the interior comprising loops, wherein the loops can be engaged by hooks.

10. The device of claim 1 wherein the sleeve comprises a fabric comprising nylon, cotton, polyester, polyolefin, wool, satin, acetate, silk, a polyolefin, or copolymers or blends thereof.

11. The device of claim 10 wherein the fabric is a non-woven fabric.

12. The device of claim 1 wherein the sleeve comprises more than one layer of fabric.


14. The device of claim 1 further comprising a treatment on an exterior surface.

15. The device of claim 14 wherein the treatment imparts a property comprising waterproofing, water resistance, soil resistance, ultraviolet protection, fabric softness, flame retardancy, resistance to microbial growth, or antiperspirant.

16. The device of claim 1 wherein the sleeve further comprises one or more dyes, pigments, decorations, indicia, patterns, or a combination thereof.

17. The device of claim 16 wherein the sleeve is decorated to coordinate with a sports uniform.

18. The device of claim 16 wherein the printed indicia is a sports team logo.

19. The device of claim 1 comprising one or more absorbent articles.

20. The device of claim 19 wherein the absorbent article absorbs odors, waterbase liquids, or both.

21. The device of claim 1 wherein the device is stored in a pocket or pouch between uses.

22. The device of claim 21 wherein the device is rolled into a cylindrical shape.

23. The device of claim 1 wherein the device is sized to fit a child, an adult female, or an adult male.

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