A protective undergarment for a football player includes an undergarment and a plurality of protective pads. The undergarment is formed out of thin, stretchable fabric and has a plurality of internal pockets. Each protective pad corresponds in shape to one of the internal pockets and may be inserted therein.
PROTECTIVE UNDERGARMENT FOR A FOOTBALL PLAYER

BACKGROUND OF THE INVENTION

[0001] The present invention relates to a protective undergarment for a football player that protects the football player that is intended to be worn in athletic activities, such as football body and more particularly to a protective undergarment that may be used in a football game where protection from spine, tailbone, rib, hip and shoulder injuries, as well as protection from abrasions and internal injuries, is desired.

[0002] U.S. Pat. No. 4,866,789 teaches a protective body suit that includes a body suit formed of a stretchable material that defines a pair of leg openings, a pair of arm openings, and a neck opening. The body suit is sized and shaped to conform snugly to the chest and hips of a user. The material can be either a closely woven or knit material or an open mesh material. Two resilient side pads are secured to the body suit between the arm openings and the aligned leg openings to protect the sides of the user. Two resilient shoulder pads are secured to the body suit between the neck opening and respective ones of the arm openings to protect the shoulders of the user. At least one resilient back pad is secured to the body suit between the side pads to protect the back of the user. The body suit is effective to hold the pads securely in place against the body of the user during athletic activity.

[0003] Athletic injuries are a growing problem, and increased emphasis is being placed on sports safety. For example, various sports associations have recently promulgated new rules aimed at reducing athletic injuries. A need exists for improved protective equipment that will provide improved protection against athletic injuries, yet which will not inordinately burden a player with increased weight or significantly reduce the mobility and maneuvering ability of the player. Furthermore, it is important that such protective equipment be made as comfortable and functional as possible in order to enhance voluntary player compliance with safety rule requirements. A wide variety of protective garments are known to the art. U.S. Pat. No. 3,135,961 teaches a free-hanging, padded T-shirt that does not, however, conform to the user's body in view of the free-hanging tail of the T-shirt. During athletic use of this protective garment, the protective padding may not always remain in its desired location against the chest of the user.

[0004] U.S. Pat. No. 5,689,836 teaches a protective undergarment that includes trousers of stretch fabric. Pads located inside the trousers are sewn to the trouser sides. The pads include laminated layers of fabric and a foam substrate. The foam substrate is perforated to augment air circulation and evaporative cooling of the wearer's skin.

[0005] Protective garments, for use in athletic events such as football, have been available for some time. So-called football pants have evolved to include pockets for holding rigid or at least semi-rigid protective plates. Such garments are typically bulky, significantly increasing a wearer's silhouette, thereby requiring special construction details to prevent injury to a wearer when the bulging parts of the garment undergo a shear action as when the wearer slides along the playing field. Such garments have been found to provide effective protection for a wearer, but, because of their bulk and movement restriction, are unsuitable for other athletic events, such as baseball, soccer or volleyball. Football pants include comprise outer garments forming a visible part of a player's uniform. It is desirable to provide lightweight, non-bulky protective apparel for use in a wide variety of sports, underneath a player's outer garments, so as not to interfere with a player's uniform or outer appearance on the playing field.

[0006] U.S. Patent Application No. 2003/0046747 teaches energy absorbing, articulated, protective pads that have improved articulation and protect areas of articulation, such as joints of a human body. Each pad of energy absorbing material has score lines along a first axis and a second axis. The score lines are cut into said pad to provide articulation of the pad. The pad also has cuts along the second axis at the periphery of the pad that provides flexibility to the pad. Many sports and occupations require safety equipment such as padding that protects the users from impacts that occur. Some non-limitative examples of sports where padding is needed include bicycling, football, hockey, in-line skate, skiing, and snowboarding. A non-limitative example of an occupation that requires safety equipment is construction. Designers of such safety equipment face a number of obstacles. One area of particular concern to designers of safety equipment is padding. Of particular concern to the designers is padding for areas of articulation. An area of articulation is a joint or other area in which at least two adjacent body parts move in different directions during an activity. For example, one common joint to protect is the knee that must bend when a user is in-line skate, running, or walking. Users prefer padding that allows a full range of motion with minimal discomfort. Users also prefer padding that allows for the evacuation of perspiration, which is known as breathing in the art. Other concerns include that the padding is washable, lightweight and durable. Some padding designs do not adequately meet these needs. One type of pad, such as the pad disclosed in U.S. Pat. No. 6,029,273 has a hard outer casing. This type of pad does not allow perspiration to escape. Therefore, this type of pad is not ideal for use in clothing. Further, this type of pad restricts movement, as the outer casing is rigid and inflexible. To allow articulation, some pads with rigid casings do provide articulated plates. Articulated cases include a plurality of plates fitted together that allow the plates to move with respect to one another in order to facilitate movement. These casings may solve the mobility problem. However, the casings with articulated plates still do not allow perspiration to escape, are heavy, bulky, and are still too rigid to insert into clothing. Furthermore, the cost of making the articulated plates is expensive and time consuming. A second type of casing includes flexible, outer casings of porous, breathable inelastic material overfilled with resilient discrete beads of elastic material. U.S. Pat. No. 5,920,915 teaches a material, while breathable, still impedes movement because the overfilled pads are semi-rigid. Therefore, this type is unacceptable for padding an articulated area. A third type of pad is a foam pad that has score lines cut into the pad to facilitate movement. U.S. Pat. No. 6,093,468 teaches score lines that are indentations cut into the material. The cuts allow the foam of the pad to flex to allow the pad to flex. The foam material is breathable and allows perspiration to escape. The score lines improve the flexiblility of a pad. However, the range of motion is impeded still as the score lines do not allow the pad to twist or form
completely to an area due to the excess material. What is need is a pad that allows perspiration to escape and that has a desired flexibility. The above and other problems are solved. The protective pad is breathable, meaning that perspiration is allowed to escape. The pad is washable as part of a garment. The pad is flexible and may move with an area of articulation to allow a user a full range of motion with minimal discomfort. The energy absorbing protective pad has a pad of energy absorbing material. The pad has score lines along a first axis and a second axis. The score lines are cut into the pad to provide articulation. Along the second axis, the pad has cuts at the periphery of the pad. The cuts provide flexibility to the pad. The energy absorbing material may be foam or any other semi-rigid material. The foam may be single layered or multi-layered. The energy absorbing material is bi-density foam. The bi-density foam has a first layer on a bottom side of the pad having a first density and a second layer on topside of the pad having a second density that is a higher density than the first density. The score lines are cut through the second layer of foam and through a substantial portion of the first layer. The score lines are cut through three-quarters of the pad. However, the score lines may also be cut to any other depth including, but not limited to, one-half and one-quarter through the pad.

[0007] Protective vests herefore devised and utilized for the purpose of protecting a user against blows are known to consist basically of familiar, expected and obvious structural configurations, notwithstanding the myriad of designs encompassed by the crowded prior art which have been developed for the fulfillment of countless objectives and requirements.

[0008] Some protective garments substantially depart from the conventional concepts and designs to provide an apparatus that is primarily developed for the purpose of protecting a user with a garment that is formed of foam segments. It can be appreciated that there exists a continuing need for a protective garment that can be used for protecting a user with a garment that is formed of foam segments.

[0009] Organized sports have become quite commonplace for youth. Games and leagues are organized for playing football. Football can be hazardous for youth. Another particularly hazardous game is the game of baseball. When a baseball is being pitched at a batter there is a possibility of being hit in the head by either a pitch or a batted ball thereby resulting in a severe injury. Another lesser-known but fairly common injury is a batter being hit in the chest causing blunt chest trauma. This type of injury occasionally can be lethal if cardiac concussion occurs, resulting in the death of a young player. A known solution to prevent these types of injuries is to wear protective vests. U.S. Pat. No. 5,742,947 recognizes this problem and provides an adjustable chest protector specifically designed to prevent these types of athletic injuries. The chest protector is C-shaped and designed to fit comfortably and unnoticeably underneath the clothing of the user while allowing free, unhindered movement. The adjustable chest protector is contoured to assume the natural shape of the user’s chest.

This makes it difficult, if not impossible, to provide universally fitting protectors to adequately protect the athlete from injury.

[0010] A protector is shaped to be worn adjacent the arm and extending upwardly to cover the chest area including at least a forward portion of the thorax, ribs and torso, near the pectoralis muscle and also posteriorly to cover the areas of the scapula and upper back muscles. This protector structure covers the part of the upper body that would normally face the pitcher when the athlete assumes a normal batting stance. For example, a right handed hitting athlete would use a customized chest protector designed to protect primarily the upper left portions of the upper body. The protector is made in two parts including a jacket-like garment having a pocket and a moldable insert designed and shaped to fit into the pocket in the jacket garment and conform to the physical body characteristics of the particular athlete. The insert is made of fiberglass, foam or felt material with a polyethylene foam cover, impregnated with a moisture curable resin, such as poly-isocyanate, in a sealed pouch. The jacket is sewn together with at least two layers of fabric or other similar material. An opening is provided along a length of seam, preferably along a bottom edge of the garment, having a separable fastener closure to seal the opening. The garment may be worn to insure the size is correct before opening the airtight pouch activates the insert by exposing the curable resin to air. Since the protector comes in two parts, it requires assembly, by the consumer, to obtain a custom fit.

Once it is determined that the protector is the right size by trying on the jacket type garment, the insert piece, which is stored in the sealed, airtight pouch, is removed from the air tight pouch, placed in the garment opening and fitted against the body of the user to obtain an exact contoured fit. Since the polyethylene cover covers the impregnated material, the resin material does not contact the athlete and/or anyone assisting in the fitting process.

[0011] There are over 300,000 hip fractures each year in the United States. Additionally, there are many other types of hip joint injuries that result in pain. Complications associated with hip injuries, such as pneumonia, can result in disruption of normal life, substantial medical costs and even death. These fractures and other injuries are particularly common among the elderly, who experience degenerative changes in bone and tissue structure with advancing age. The degenerative changes become much worse after a hip fracture. In view of ever increasing life expectancies, the number of injuries of this type and the costs associated with them can be expected to increase with time. The hip joint is an enarthrodial or ball-and-socket joint formed by the reception of a ball-shaped head on the upper or proximal end of the femur into a cup-shaped cavity in the pelvis called the acetabulum. A fall or blow to the hipbone area, if the area is unprotected, can result in body tissue injuries, dislocation of the femur head from the acetabulum, and fractures of the acetabulum or various parts of the proximal femur or other damage in the vicinity of the hip. Particularly vulnerable is the so-called greater trochanter that protrudes outwardly from the proximal femur just below the joint and the adjoining thin neck of the femur. Muscle and other body tissue relatively poorly protect this region in comparison with the regions of the hip surrounding it. In fact, the greater trochanter is readily accessible to the touch, its position being generally indicated by an elevation in the hip area due to the thinness of the tissues that cover it. There are garments
that are capable of providing a measure of protection with respect to these problems are usually difficult to apply and uncomfortable to wear. An effective hip area shock and stress protective garment that is effective, light, sufficiently comfortable to wear for extended periods of time including while sleeping at night, and cosmetically acceptable when worn under clothing during normal daytime activities, is not available.

0012 U.S. Pat. No. 6,090,565 teaches an undergarment that incorporates pads of shock absorbing foam material for protecting the hip joints of the wearer.

0013 Protective body padding for use in athletics must also meet a number of exacting requirements. In the first place, it must be effective for the purpose intended and provide adequate protection for the type of impact expected from a particular sport or athletic activity. These impacts may vary from one sport to another, and are particularly extreme in the sport of hockey, where the hockey puck may be traveling at high speed when it hits the body of a player. The body padding must also be light in weight, so that it does not interfere with the athletic ability of the player. The padding must also be as far as possible, of reasonable cost so that it is affordable and usable by all players, regardless of their financial position. It should be easily and securely attached to the body. It should be reusable many times over and capable of withstanding numerous high speed impacts without breaking down and losing its padding effectiveness. All of these requirements are fairly self-evident and are set out here merely as a background for the appreciation of the body padding according to the present invention.

0014 In the past, body padding has usually been made up of some kind of padding material that might in some cases simply be cotton batten, or hemp fibers, or other common natural padding materials. These materials would simply be stuffed into cavities in padding garments such as leg pads, waist pads, shoulder-pads and the like. The pads themselves in the past have typically been made of cotton or other fabric materials, and in some cases leather has been used. However this increases the cost and weight of the padding, and also adds to the bulk without providing much additional protection. More recently synthetic materials have been used. Nylon fabric materials have been used as the basis for constructing the padding garments, and synthetic plastic materials such as foam materials have been used in some case, enclosed within such nylon fabric garments. However, all of these prior padding systems have usually involved sewing as a means of fastening the outer materials together, and the padding has been to a considerable extent, liable to damage, such as cracking folding and developing lines of weakness, if it isflexed around the body during use. In some cases in an effort to overcome these cracking and folding problems, foam padding materials were used which were of two or three part laminate construction. Pads were cut out from sheets of foam material such as polyester or polyethylene or polyurethane foam, for example. Then, in order to hold these foam pads together, they would be laminated with injection molded or thermoformed shell like member of various shapes of harder plastic such as a polyethylene. The fabrication of these pads was labor intensive. The fabrication of the injection moulded shaped shells was costly, and the end result was relatively heavy and not a totally effective form of padding. Especially, the use of hard shells formed of injection-molded plastic was liable to suffer damage as a result of heavy impacts of small objects such as a hockey puck. Once the outer shell was broken, the padding efficiency of the garment was drastically reduced and it would have to be either repaired by replacing the padding or simply replaced altogether. Furthermore the use of rigid shells imposed restrictions on the design of the padding. Clearly if the shell was too extensive it would substantially interfere with the mobility of the wearer. Consequently there had restrictions placed on the size and extent of the hard shell. This could in some cases leave parts of the body unprotected. In order to make these systems effective it was necessary for manufacturers to resort to more and more expensive materials and more and more expensive manufacturing techniques, so that the cost of such pads became a very significant factor in the cost of participation in a sport or athletic activity, and the bulk and weight was inconvenient.

0015 U.S. Pat. No. 6,408,446 teaches a pair of protective under-shorts that absorb shock and protect the hips of the wearer against the shock. The under-shorts include a pair of large pockets on the inside over the hips, and protective pads in the pockets. Each of the pads extends round approximately ¼ of the circumference of the wearer. The pads are of a rounded shape, with the upper edge slightly concave, and extend vertically from the hip-bone to below the enarthrodal joint of the hip. The pads are ¼” thick, and comprise closed-cell foam material with a density of 10.0 to 13.0 lbs/cu. ft., a compression resistance of 9.0 to 13.0 psi, and a Lensile strength of at least 150 psi.

0016 U.S. Pat. No. 6,145,134 teaches a body protector that is custom fitted to a body part to be protected formed of a flexible garment member shaped to lie over the body part to be protected. The garment member is made with two spaced, inner and outer sheets of material forming an inner pocket between the layers. An opening for access into the pocket is formed along at least one of said edges and includes a closure fastener for opening and closing the opening. An insert made with moisture that is curable, resin-impregnated material is shaped to fit into and dimensionally conform to the pocket to provide a rigid barrier for the body part when the resin is hardened. Straps are provided to secure the protector to the user.

0017 U.S. Pat. No. 5,937,447 teaches a protective garment that includes a chest protector being formed of solid foam. An abdominal protector includes a plurality of inflatable tubular mechanisms. The abdominal protector is connected to the chest protector. A groin protector is connected to abdominal protector and formed of solid foam. A strap assembly secures the protectors to a user.

0018 U.S. Pat. No. 6,070,273 teaches a body pad that has a body shape molded pad and that is formed of expanded polypropylene foam material, of a predetermined density, and molded and shaped to conform to a portion of the body to be protected, a laminate reinforcement of scrim filaments bonded with the exterior of the molded body pad, and shaped to the exterior of the body pad, inner and outer covering panels formed of a laminate of synthetic woven fabric the inner and outer panels being placed on opposite sides of the pad, and the fabric being bonded to the pad on both sides, and the layers of the inner and outer panels being bonded together, around the edges of the pad.

0019 U.S. Pat. No. 5,187,812 teaches a football shoulder pad that includes a pair of relatively rigid arch portions that
extend over the shoulders of a wearer and a pair of resilient pads that are removably secured to the rear surfaces of the arch portions. The pads reduce the tendency of a football to bounce off of the arch portions.

[0020] The inventor hereby incorporates all of the above referenced patents into his specification.

SUMMARY OF INVENTION

[0021] The present invention is generally directed to a protective undergarment for a football player. The protective undergarment is formed out of lycra. Lycra is a thin, stretchable fabric.

[0022] In a first aspect of the present invention the protective undergarment has a plurality of internal pockets. There is a plurality of protective pads. Each protective pad is corresponds in shape to one of the internal pockets and may be inserted therein.

[0023] In a second aspect of the present invention each protective pad is formed out of a sturdy, foam material.

[0024] In a third aspect of the present invention a football player is able to customize his undergarment by either removing or adding protective pads.

[0025] Other aspects and many of the attendant advantages will be more readily appreciated as the same becomes better understood by reference to the following detailed description and considered in connection with the accompanying drawing in which like reference symbols designate like parts throughout the figures.

[0026] The features of the present invention which are believed to be novel are set forth with particularity in the appended claims.

DESCRIPTION OF THE DRAWINGS

[0027] FIG. 1 is a front elevation view of a protective undergarment in accordance with the first embodiment of the present invention being worn by a football player showing protective pads that have not been inserted.

[0028] FIG. 2 is a rear elevation view of the protective undergarment of FIG. 1 being worn by a football player showing the protective pads that have not been inserted.

[0029] FIG. 3 is a front elevation view of the protective undergarment of FIG. 1 showing the protective pads inserted.

[0030] FIG. 4 is a front elevation view of a protective undergarment in accordance with the second embodiment of the present invention for a football player who plays one of the “skill” position showing protective pads inserted.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0031] Referring to FIG. 1 in conjunction with FIG. 2 a football player is wearing a first protective undergarment 10. The first protective undergarment 10 includes an undergarment 11 and a plurality of protective pads 12. The protective pads are disposed separately from the undergarment 11. The undergarment 11 is formed out of a stretchable fabric, such as lycra. The undergarment 11 has a plurality of internal pockets 21. Each protective pad 12 corresponds in shape to one of the internal pockets 21 and may be inserted therein.

[0032] Referring to FIG. 3 in conjunction with FIG. 1 and FIG. 2 all of protective pads 12 have been inserted into the internal pockets 21.

[0033] Referring to FIG. 4 a football player who plays a “skill” position is wearing a second protective undergarment 110. The second protective undergarment 110 includes an undergarment 111 and a plurality of protective pads. The undergarment 111 is formed out of a stretchable fabric, such as lycra. The undergarment 111 has a plurality of internal pockets. Each protective pad corresponds in shape to one of the internal pockets and may be inserted therein.

[0034] From the foregoing it can be seen that a protective undergarment for a football player has been described. It should be noted that the sketches are not drawn to scale and that distances of and between the figures are not to be considered significant.

[0035] Accordingly it is intended that the foregoing disclosure and showing made in the drawing shall be considered only as an illustration of the principle of the present invention.

What is claimed is:

1. A protective undergarment for a football player, said protective undergarment comprising:
   a. an undergarment being formed out of thin, stretchable fabric and having a plurality of internal pockets; and
   b. a plurality of protective pads each of which corresponds in shape to one of said internal pockets and may be inserted therein.

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