The present disclosure pertains generally to exercise clothing, and more specifically, to weighted exercise pants. A weighted exercise pants system is disclosed employing weighted leg panels joined by a stretch fabric central expansion section. The weight pocket systems employ a plurality of weight sleeves capable of removably receiving one or more weights. The weighted exercise pants of the present disclosure can be used for strengthening muscles in a manner specific to the way the muscles are used in a particular sport, for other types of exercise, or for strength development, speed training, over-speed training and plyometric training.
ADJUSTABLE WEIGHTED EXERCISE PANTS

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] Not applicable.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] Not Applicable.

BACKGROUND OF THE INVENTION

[0003] 1. Field of Use

[0004] The present disclosure pertains generally to exercise clothing, and more specifically, to weighted exercise pants.

[0005] 2. Background Technology

[0006] The use of weight pants is extremely effective for strength development, speed training, over-speed training and plyometric training. Benefits of the use of weight pants include strengthening muscles in a manner specific to the way the muscles are used in a particular sport. See, e.g., M. Yessis, “Using Weighted Pants”, tennistrainer.com. Additionally, the use of weight pants is an effective tool to supplement various leg strength exercises, such as steep hill sprints, stadium stair runs, dragging/pushing weight sleds, and sand workouts. See, e.g., the article by D. Galt, “Dynamic Leg Strength” posted Dec. 11, 2008 on the Under Armour Underground: TNP Training site, underground.underarmour.com/trainings. An athlete’s running speed can also be enhanced by improving stride length through, e.g., the use of weight pants, weighted vests, running chutes, and harnesses; and uphill running. See, e.g., L. Brown and V. Ferrigno, “Stride Frequency and Stride Length”, from Training for Speed, Agility and Quickness, 2d Ed., Human Kinetics Publishers, Inc. (available online at www.humankinetics.com). These articles are incorporated herein by reference.

[0007] Various prior art exists in the general area of weighted exercise garments and devices. For example, U.S. Pat. No. 4,180,261 to Kolka, “Exercising device for runners” provides that to acquire greater speed in running, variable weights are attached to the fronts of the thighs slightly above the knees. The weights and their pocketing structure are suspended from a waist belt by adjustable hip suspension straps. Greater effort is required in picking up the legs while running and muscles important to running are strengthened.

[0008] Additionally, U.S. Pat. No. 4,958,386 to Louis-Jeanne, “Aerobic pants”, discloses athletic legwear designed especially for use by a person while engaged in aerobic exercise that includes a pair of pants of approximately knee-length. A plurality of pocket assemblies are removably attached to the pants between the waist and knee of the wearer, each pocket assembly having one or more pockets adapted to hold securely therein one or more weights.

[0009] Also, U.S. Pat. No. 6,671,887 to Eligian, et al., “Weighted accessory for garments”, describes a weighted garment having a plurality of pockets for insertably receiving and retaining weighted inserts or members, whereby the increased weight serves as resistance for exercising the wearer’s limbs, torso, etc. The pockets are integral with the stretch material of the garment and a D-ring is installed on the belt of the garment for attachment with a pull or toggle cable. The pockets are reinforced and a separate arrangement of pockets may be releasably attached to the exterior surface of the garment.

[0010] Further, U.S. Pat. No. 7,156,792 to Gibson-Horn, “Methods for weighting garments or orthotics and garments and orthotics therefor” provides for methods and apparatuses for aligning a person’s center of gravity over the base of support using a weighted garment or orthotic herein provided. These methods and apparatuses are particularly suited to individuals suffering from various balance or neurological disorders. The methods described herein involve the use of body positioning and perturbation techniques. These methods may be manual, computer assisted, or some combination thereof. In some variations, video recording equipment or other electronic equipment is used. The apparatuses of the present invention comprise a variety of weighted garments or orthotics. These garments or orthotics may take on any number of configurations. In some variations, the weighted garment or orthotic is a vest, in other variations, the weighted garment or orthotic is a brassiere, corset, shoulder pad, undergarment, belt, seating device to be used in combination with a wheelchair, tee shirt, body suit, or combinations thereof.

[0011] U.S. Pat. No. 6,554,752 and U.S. Pat. No. 6,244,997 and US20030186789 to Cook, “Weighted exercise apparatus and method”, are directed to exercise weights and method, regarding belts, hand weights, arm weights, ankle weights, and knuckles weights. U.S. Pat. No. 6,200,244, also to Cook, “Method and apparatus for wearing which is impervious to moisture”, pertains to an apparatus for wearing. The apparatus includes a porous fabric. The apparatus includes padding disposed adjacent the porous fabric. The apparatus includes a rubber coating disposed over the porous fabric and infiltrating through the porous fabric and bonding to the padding. A method for producing a wearing apparatus. The method includes the steps of attaching support wires to a neoprene laminate. Then there is the step of lowering the support wires with the neoprene laminate into a tank of liquid vinyl. Next there is the step of lifting the support wires with the neoprene laminate such that a coating of liquid vinyl remains on the neoprene laminate. Then there is the step of drying the liquid vinyl on the neoprene laminate. U.S. Pat. No. 6,005,041 to Cook, “Reinforced thermoplastic elastomeric gel (RTEG)”, pertains to a novel, flexible composition which contains reinforcement encased in intimate contact with a melt blended mixture of low durometer polymer gel. The reinforced polymer has unique properties obtained from the combination of reinforcement and elastomeric gel. Density, thermal conductivity, flexibility, elongation and strength are some of the properties which may be tailored by modifying the reinforcement and polymers. The combination of reinforcement with thermoplastic and oil create a gel and allows for deformation and impact resistance not obtainable with standard elastomers including vinyl, rubber or silicon. The addition of reinforcement makes it possible to tailor the gel properties while still maintaining many of its unique attributes. Particularly reinforced parts can be formed into a desired shape and take on some of the properties of the reinforcement. They can be deformed during use, but because these elastomeric gels have a high elastic memory, they return to their original shape. In addition, fiber reinforcement can be used to block deformation in specific directions. These and other properties make this system ideal for many applications including weights, shock absorbers, medical devices, seals, etc.

[0012] US20080280737, also by Cook, “Weighted Exercise Chaps and Method”, discloses an exercise device and method for the lower body. The device includes a belt and weighted chaps system which hold one or more individual
weight inserts. The device includes removable section: a thigh section connected to the belt section and the option of a calf section connected to the thigh section. The device includes pockets on the weighted chaps and belts to adjust the position of weight, and flexible solid weight inserts that are held between a non stretch support and a stretch pocket layer secured against the leg which and conform to the contours of the leg, the weights are preferably made of dense material suspended in a flexible matrix. The method includes positioning and storing weights, the connection to external resistance, and exercise to increase muscle strength, stamina, jump height, bone density, circulation, and to treat nervous system disorders.

[0013] U.S. Pat. No. 6,039,677 to Spletzer, “Exercise thigh weight system”, pertains to an exercise thigh weight system that includes a sturdy, semi-rigid, and adjustable waist belt, a right leg harness assembly, right leg harness assembly attaching apparatus, a left harness assembly, and left leg harness assembly attaching apparatus.

[0014] U.S. Pat. No. 5,553,322 issued to Cebo-Johnson, “Weighted exercising garment”, discloses a weighted exercising garment is formed in one piece of resilient flexible material so as to be a snug fit on the wearer’s body. The garment comprises a central portion around the wearer’s torso, an upper portion passing over the shoulders, and a lower portion extending downwardly from the central portion and including portions that pass around the thighs. Packs of weights are attached to the upper portion at the front over the chest and over the upper back, and further packs of weights are attached around the thighs. The weights, in the form of packs each having parallel pockets with a respective plurality of individual weights, are removably attached by a curly pile loop and hook material such as VELCRO®. The garment forms part of a kit which includes two arm weight carriers worn around the wrists and two leg weight carriers worn around the calves.

[0015] U.S. Pat. No. 4,303,239 to Walsh, Jr., “Thigh weights”, provides a totally adjustable thigh muscle exercise device. The device is totally independent of any other exercise device or structure, is constructed to provide exercise to both the flexor and extensor thigh muscles, and is adjustable as to size, weight and weight location on the thighs so that a single device may be utilized by any user at any amount of weight and for any type of thigh exercise. The device includes a belt, which may be adjusted to any user’s waist size and weights suspended from the belt for location at the front of the user’s thighs. In preferred embodiments, the location of the weights along the front of the device may be adjusted to accommodate the individual user’s needs and the amount of weight may be easily varied. In preferred embodiments, the space between the belt and the weights may also be adjusted to further accommodate the user or the particular exercise being practiced.

[0016] U.S. Pat. No. 7,909,624 to Chrishon, “Exercise system”, describes an exercise system for allowing a user to increase endurance, power, speed, quickness, and overall body conditioning. The exercise system includes a body member that is adapted to snugly fit around a portion of a user. A plurality of pockets is coupled to the body member. Each of the pockets has a flap that is secured to a front panel of each the pockets such that the flap is for closing each of the respective pockets. A plurality of weight members each are selectively insertable into each of the pockets such that the weight members are adapted to change the weight resistance against the muscles of the user when the body member is fitted around a portion of a user.

[0017] U.S. Pat. No. 6,669,608 to Winston, “Adjustable weighted vest”, discloses an exercise vest includes a plurality of weight receiving vest pockets, all disposed on the outer surface of the vest at locations spaced from the wearer’s spine, shoulders and upper torso. Weight receiving modules are disposed in respective vest pockets and include individual pouches for receiving the weights. The module and vest each include at least one foam padding layer to provide at least two layers of such padding between the weights and the body of the wearer.

[0018] U.S. Pat. No. 5,978,964 to Gaston, “Exercise apparel and associated weight”, pertains to a sportswear garment manufactured from a form-fitting clothing article having at least one flexible weight and a plurality of pockets to receive and maintain the weights in an immobile manner is provided. The garment may be provided in a variety of forms including for fitting various body portions. The apparel items are constructed of lightweight, durable form-fitting fabrics that conform to the body of the athlete when worn. Various pocket styles and positionings are possible. The flexible weights may have a flexible metal core surrounded by a cushioning layer and/or a plastic coating on the cushioning layer. In another embodiment, weights are provided having a body comprising a thermoplastic elastomer containing a finely divided mineral filler, the body preferably being covered by an expandable knit material. A method is also provided for manufacturing the latter type of weight.

[0019] U.S. Pat. No. 5,937,441 to Raines, “Weighted exercise and therapeutic suit”, describes a weighted suit to be used in athletic training, physical therapy, muscle toning and weight reduction. The suit has a bottom and top that can be adjusted to accommodate the physical characteristics of the wearer, as well as the activity to be performed by the wearer while the suit is worn. The suit also has weighted gloves which may be attached to the sleeve portion of the top of the suit. The suit is constructed from spandex material that accommodates stretch in one direction and resists it in another direction approximately perpendicular to the first. Weight compartments are located about the suit into which weight units may be installed. Variable weight packets may be used to selectively apply different resistance experienced during the user’s activity. The weights are located away from the user’s joints, and protective components may be integrally included into the suit to cover vulnerable knee and elbow joints. The suit is reinforced with support strapping that is continuously sewn to the suit for supporting the weight packets against gravity and inertial forces during use. A support belt for the user’s back may be optionally included as an integral component. The suit clings snugly to the user’s physique and therefore may be worn beneath other clothing, such as a business suit.

[0020] U.S. Pat. No. 5,659,898 to Bell, Jr., “Exercise suit having flexible elongated weights between elastic fabric layers”, discloses an elastic body suit constructed of two breathable, durable elastic layers quilted together over a series of flexible weights. The first, inner layer of elastic is lighter than the second, outer layer. Air ports for body cooling and air circulation at the arm pits and the backs of the knees are formed from the inner layer. The flexible weights are constructed of polyurethane and metal blended material made through an extrusion process normally used for making tub-
ing and hoses. The suit can be made with an optional third layer of stretchable material to enhance its appearance, i.e., spandex or latex.

U.S. Pat. No. 5,572,737 to Valice, “Padded skating shorts”, pertains to two-piece padded skating shorts include a padded core shell and an outside shell releasably fastened to the padded core by first and second pairs of complementarily-formed fastening members at leg portions thereof. The padded core shell includes ball joint, thigh, hip, tail bone, kidney and buttocks pads, some of which include curved reinforced padding. The outside shell includes at least one pocket to store items therein. Waist portions of the core shell and the outside shell each include a belt sewn therein to secure the core shell and the outside shell to a wearer thereof.

U.S. Pat. No. 5,144,694 to Condred Daoud, et al., “Exercise apparel and weight packets”, pertains to exercise or physical therapy apparel including a vest, pants, spine strap, belt, wrist bands, ankle bands and weight packets. The vest and the pants are each provided with structure for holding at least one weight packet. The weight packets include plural rows and plural columns of weight members adjacent a layer of padding inside of a cloth pouch.

U.S. Pat. No. 5,075,902 to McReynolds, et al., “Shorts with detachable elastic belts at the cuffs having detachable weight compartments”, discloses a weighted training garment comprising a pair of shorts having portions which surround each thigh area of the user supplied with weights contained in a cuff-like device. The shorts are constructed of a fabric having substantially greater stretch in a direction lateral to the vertical axis of the wearer’s body using fibers such as spandex, nylon, and blends thereof. The cuff device includes a series of weight containing compartments which are connected to one another by a flexible, elasticized fabric belt which stretches primarily in the lateral direction. The cuff devices are removable secured to the thigh portion of the shorts by “Velcro” fastening tape or other suitable fastening means. The weight containing compartments may also be openable and closeable to allow the addition or removal of weights and may also include fastening means of a type that they can be removably connected to the thigh portion of the shorts or to the cuff-like device.

U.S. Pat. No. 5,010,596 to Brown, et al., “Conformable weighted conditioning garment”, provides a garment for improving physical conditioning. The garment is formed with shorts having thigh encasing leg sections extending downwardly from a waist to surround and resiliently conform to the thighs of a wearer. A plurality of pouches are defined in each of the thigh encasing leg sections and are spaced laterally apart about the front, rear and outer thigh areas of the leg sections. A plurality of solid plastic encased lead weights are deployed and gripped within at least selected ones of the pouches. The leg sections are preferably secured about the legs of the wearer above the knees by adjustable belts located in hems at the lower extremities of the leg sections. The conforming nature of the garment and the way in which the weights are snugly gripped in the pouches ensures that the weights do not move relative to the wearer’s skin, and do not bobble or shift as the wearer runs or engages in other physical conditioning activities.

U.S. Pat. No. 4,658,442 to Tomlinson, “Weight vest”, describes a snugly-fitting, variable-weight vest for wearing while exercising generally comprising a back panel, and left and right front panels connected to the back panel at their proximate top edges. The panels are of flexible material and are relatively short, having a length above the waist of a user. Elastic panels join the front and back panels along their respective side edges. The vest is fastened at the front with a plurality of straps to adjust the vest to conform to the user’s body. Pockets on the panel receive weights which are shaped to snugly fit into the pockets. The weights are easily bendable by a wearer to conform to the wearer’s body. A second embodiment employs horizontal pockets on the inside of the vest and padded weights. The vest is designed to fit snugly and conform to the user’s body so that the weights do not move relative to the user’s body during use.

U.S. Pat. No. 4,953,856 to Fox, III, “Exercise garment”, discloses an exercise garment comprising a waistband, a pair of upper leg straps attached to the waistband for positioning about the thighs with weight attachments at the front of the thighs, a pair of lower leg straps for placement about the calves and providing for weight attachment in the back of the calves. An upper body strengthening suit complements the lower body suit and has provisions for weights up the spinal cord across the shoulders to the elbows. This is carried out through the use of an upper waist strap with a generally T-shaped portion having a T-base up the spine for the support of weights with a cap to the “T” crossing the shoulders extending to the elbows and provided for placement of weights therein. Shoulder straps attach the upper T-cap across the shoulders down the front of the wearer back to the upper waist strap for support thereof.

U.S. Pat. No. 5,033,117 to Fairweather, “Exercise garment”, provides a unitary full body exercise suit. The invention is a one piece garment including a pair of shorts with two thigh portions for covering at least part of the thigh of a user integrally connected to a upper body portion which covers a substantial portion of the abdomen of the user. A set of pockets adapted to receive a weight are included, one on each thigh portion of the shorts. In the more specific embodiment, the invention is constructed of synthetic rubber and further includes belt loops between the upper body portion and the lower body portion adapted to receive a belt therebetween. The belt loops are comprised of straps which further support the weights in the pockets. The straps are sewn into the suit. Look and loop type fasteners are provided at the top of each of the pockets. Shoulder straps are included on the upper body portion of the suit. The suit of the present invention provides a full one piece exercise suit which employs easily removable weights located and supported for optimum physical exertion and safe operation.

U.S. Pat. No. 5,048,125 to Libertini et al., “Athletic sportswear”, discloses an article of apparel for use as athletic sportswear sized to cover at least a portion of the torso, comprising at least two layers of fabric attached together to form the shape of the article. The layers are provided with a plurality of pockets between the layers and extending longitudinally along a portion of the length of the article. The pockets enclose flexible material of sufficient density to substantially increase the weight of the article.

U.S. Pat. No. 5,547,445 to Chang, “Weighting device for exercise purposes”, discloses a weighting device that includes one belt engaged onto a user for exercise purposes and includes a number of pockets formed on the belt for receiving a number of weight members. Another belt has a middle portion secured to the middle portion of the previous belt and is engaged to the previous belt so as to force the weight members toward the users and so as to firmly retain the
weight members in the pockets. The weight members may thus be prevented from moving relative to the users.

U.S. Pat. No. 5,555,562 and U.S. Pat. No. 5,784,716 to Holt et al., “Articular conditioning system”, both describe a flexible articulating system that includes a plurality of elongated, solid, non-sniffing weight members. The weight members may be removable for cleaning, and may be replaced by progressively heavier weight sets. Weight is not merely added to the wearer. The weights are advantageously evenly distributed across the body and located above and below the respective joint cavities. The disclosed systems are particularly well suited for sports specific training. The articulates may be properly and safely conditioned while exercising the muscles that control those articulates.

US20000139005 by Whaley, “Weighted exercise clothing”, describes a weighted article of clothing comprising a clothing substrate with weights attached thereto, the weights being made of a gel and being strategically placed so as to not interfere with the movements of a wearer and to not interfere with outer clothing or equipment worn over the weighted article of clothing and with the weights being arranged in a plurality of weight clusters and linking strands, with neighboring weight clusters being connected together with the linking strands.

US20000111667 by Dimucci, III, “Weighted thigh pad apparatus and method of use”, relates to a weighted thigh pad for strength training while participating in a full contact sport. The weighted thigh pad includes a conforming plate, removable elements attaching to the conforming plate and resilient materials. The removable elements include weighted members and spacer members varying the desired weight during strength training by the user. The invention also relates to an exercise garment receiving the weighted thigh pad in a pocket. The invention further includes a method of strength training including selecting the desired weight and moving the thigh muscles.

US20001004714 by Zigmont, “Support device for supporting the back, hips, upper thighs and groin areas”, pertains to a support device that provides support to selected regions of a human body, such as the back, hips, upper thighs and groin areas. The support device comprises an undergarment or body suit which is adapted to be disposed against the person’s body and extends from the thorax just below the chest down to the upper thighs. A support belt is positioned at the loin, hips, and abdomen areas of a wearer and secured thereto by a detachable attachment. Two opposite lateral portions extend downwardly from the support belt and secured to the upper thighs of the wearer by detachable attachments. The detachable attachments are adjustable so as to allow the tension against the person’s body according to the wearer’s preferences.

US20030092544 by Reed, “Universal weighted conditioning garment and system for resistance training” describes a universal weighted exercise and resistance training garment, and a system thereof, to be worn by humans and non-humans, for body conditioning and training, and more particularly, a garment (with configurations of short sleeves or long sleeves, and short pants or long pants) with pouches for holding weight pads, said garment being constructed of a material that wicks moisture from the wearer and having a plurality of perpendicular, non-stretchable, fabric strips to provide immovable support for the weight pads, similar to a skeletal structure. Also disclosed is a related variety of conditioning components comprising weight pads held to a body by garments or straps, and worn by athletes for the purpose of weight resistance training. The variety of weight pads and garments can also be dimensioned for non-human use, such as horses and dogs for athletic training and exercise.

US20070283479 by Hasanen, “Training Trousers”, relates to training trousers, for use particularly in training improving muscular condition, to increase the stress of the training and including additional weights. The additional weights are attached to the trousers (1), essentially in the form of sheet-like parts (3) that conform to the shape of the wearer’s body and the sheet-like additional weights (3) are located on both sides. The additional weights (3) are formed of a relatively heavy rubber or plastic-based sheet material.

Weighted exercise vests are available from, e.g., GoFit.net and feature not only pads covering the total body coverage, as well as a one-size-fits-all, double enclosure design. The GoFit vests are adjustable in weight, using granulated steel shot packets, which conform to the wearer’s body, and allow the wearer to use as little as 0.75 lbs and up to 20 lbs. The removable weight bags are available in 0.75 lb weight. The vests contain a series of rectangular-shaped pouches into which a weight bag can be added. Each pouch contains a stretchable fabric covering containing a horizontal slot located at the median position of the pouch. To insert the weight bag into the pouch, one end of the weight bag is slipped into the medial slit, and pushed up into the pouch. The lower part of the fabric covering the pouch is then pulled over the bag so that the bag is now fully inserted within the pouch and nested behind the slit. The pouches, and their respective slits are located on the inside of the vest so that when the vest is being worn, the weights cannot easily be adjusted. The weight bag, weight pouch system of the GoFit vest is incorporated herein by reference. Disadvantages of the weighted vest systems include that they can place strain on the wearer’s neck and back, might be difficult to use for a wearer who has a weak or injured upper body, or might not be useable by an athlete recovering from a surgery that requires no use of the upper body during the healing process. Similar weight systems are available from GoFit.net for use around the wearer’s ankles, however, ankle weights can place strain on the wearer’s knees. Other prior art exercise systems include a belt containing weights, a belt with a hook for adding free weights.

Weighted pants of the “chaps” variety are offered by Ironwear Fitness, store.ironwearfitness.com, under the registered trademark “IRONWEAR”. Also marked under the trademark, “Uni-Pants”, these chaps style exercise pants use a flexible weight “material”, called the “Flex-Metal” weights. The “Flex-Metal” brand weight inserts are ½ inch thick, 2 inches wide and 4½ inches long. The inserts fit into the internal stretch pockets of many of the IRONWEAR products including those sold under the following marks: Uni-Vest, Uni-Pants, Under Vest, Cool Vest, Hand Irons, Ankle Irons, Shoe Irons and Iron Belt. Most IRONWEAR products are supplied with one weight per pocket, but the pockets have been specially designed to hold one or two weights securely. According to Ironwear Fitness, the Flex-metal weight inserts are much safer than any other weights and do not push into your body. Metal bars can be extremely dangerous if one falls and they move around during exercise. Metal bars also block one’s movement and cannot be used comfortably for floor exercises. Shot and sand bags although less dangerous move around and bulge out causing localized high pressure areas which can chafe and bruise, and are also
not suitable for floor exercises. The thin Flex-Metal™ weights conform to the shape of the user’s legs and become one with the user’s body. The Uni-Pants products have a heavy padded ballistic Nylon shell for maximum durability and soft fabric covered double stitched edges for comfort. The Uni-Pants are noted to be strong and flexible and allow for a full range of motion. Uni-Pants chaps product open center design allows air to flow between your legs to help you keep cool. According to Ironwear Fitness, other weighted pants designs cause your legs to sweat and overheat. Also the chaps design allows the user to quickly adjust the tension or release the thigh section to give the legs a rest, while keeping the pants on. The Uni-Pants™ chaps employ an oversized strapping system allows them to quickly be adjusted to fit almost any 100 to 300 pound person, using a double adjustment padded hip belt to help hold the system comfortably in the correct position on the hips while the oversized elastic thigh straps hold the weights securely in place while still allowing the muscles to move, even during rigorous exercise. Additionally, the Uni-Pants™ chaps can be connected to a wide varied of external resistances for pulling and jump training. The design includes 6 heavy duty connection tabs or rings around the belt for connecting to other support or resistance. The Uni-Pants chaps have a number of accessories, including adjustable suspenders with shoulder pads, and a waist expander pad.

In addition to the above, many styles of athletic pants are now available for a variety of sports, such as hockey and football. For example, Easton-Bell Sports, Inc. (Van Nuys, Calif.) offers a wide variety of padded hockey pants, such as the those offered under the STEALTH and SYN-ERGY trademarks. These pants designs are designed to be lightweight and mobile while also providing protection to the wearer in key areas. Some of the designs include a forward flex feature that permits a greater range of motion for the entire torso area by segmenting the upper portion of the pants to allow complete freedom of mobility in between the hip and the torso. These designs also include a forward flex spine protector to protect the lower back while permitting the wearer to flex forward. These hockey pants also employ ergonomically designed holster-style belt systems improve stability using a 2-way belt system that anatomically sits on the wearer’s hips to keep the pant securely in place while eliminating buckle interference. These pants also employ thigh pads. The split-shell design strategically combines 840D, 420D, and textured nylon with ventilated mesh zones to optimize performance. Other nylon, such as 210D can also be employed. Moisture wicking materials, such as those sold under the “Bio-Dry” mark can also be employed. These hockey pants designs, displayed on eastonhockey.com are incorporated herein by reference.

Additionally, Bauer Hockey, Inc. provides a line of protective hockey pants. For example, U.S. Pat. No. 7,523,508 to Contant et al., “Hockey pants”, discloses hockey pants for protecting a wearer having a lower spine region, lower ribs, a waist region, left and right hip regions, a crotch region, and left and right thighs, the pants comprising an inner protective unit comprising first, second and third left separate protective pads and first, second and third right separate protective pads for covering the respective left and right hip regions, the first, second and third left pads being connected together by a first elastic band and the first, second and third right pads being connected together by a second elastic band, each of the first and second elastic bands allowing movement of the third and second pads relative to the respective second and first pads between an extended position, wherein there is first overlappings between the respective third and second pads and second and first pads, and a retracted position, wherein there is second overlappings between the respective third and second pads and second and first pads, the second overlappings being larger than the first overlappings. Hockey pants from Bauer are showcased on www.bauer.com under the trademarks SUPREME, SUPREME ONE55, SUPREME ONE75, SUPREME ONE55, SUPREME ONE35, VAPOR, VAPOR XXXX, VAPOR XXV and VAPOR XVI. These hockey pants designs, displayed on bauer.com are incorporated herein by reference.

The above references are incorporated herein by reference.

SUMMARY OF INVENTION

In one embodiment of the present invention there is disclosed and described adjustable weight exercise pants comprising: a right leg panel having a top end and a bottom end, a left leg panel having a top end and a bottom end, a central expansion section disposed between and connected to the right and left leg panels to form a pants structure having an upper, central pants opening, a lower right leg opening disposed at the bottom end of the right leg panel, a lower left leg opening disposed at the bottom end of the left leg panel, and a front side and a back side. In one embodiment, the central expansion section can be constructed of a stretchable fabric, the left and right leg panels can be constructed of a less stretchable fabric than the central expansion section fabric, the pants further comprise a padded waist section attached to the upper, central pants opening, the padded waist section further comprising a right and left side girdle section and a lumbar support section located between the right and left side girdle sections. The lumbar support section is located on the pants structure back side. The exercise pants further include a padded weight pocket system comprising a padded right side pockets pocket fixedly attached to the right leg panel above the right leg panel bottom end, and a padded left side weights pocket fixedly attached to the left leg panel above the left leg panel bottom end. The right side and left side weights pockets further comprise a plurality of weight sleeves for holding one or more weights, each of the weight sleeves having a sleeve opening for receiving one or more of these weights. A pocket flap can also be used for covering the sleeve openings. The exercise pant also includes one or more weights removably receivable into the weight sleeves.

The exercise pants may also employ a belt fastening device for adjusting the tightness of said padded waist section when worn by a user. The weights may be selected from the group consisting of: 0.5-2 lb rigid bar-style weights, 0.5-2 lb bag-style weights, and 0.5-2 lb flexible bar-style weights.

In one embodiment, the weights comprise bags filled with dense granular material, such as, steel shot or sand.

In one embodiment, the exercise pants use 6 weight sleeves on each side. In another embodiment, the pants structure is a hockey pants structure.

In another embodiment of the weighted exercise pants, the right leg panel members are constructed of single layed of nylon, the central expansion section is constructed of spandex material, the padded waist section is constructed of a 2-ply nylon shell surrounding a layer of neoprene-type foam, and the weight sleeves are constructed of nylon. The pocket
padding can also be made out of a neoprene-type foam. Other suitable materials could be employed.

[0046] In yet another embodiment, the adjustable weight exercise pants uses a different weight pocket system. In this embodiment, the padded weight pocket system comprises a padded right side weights pocket fixedly attached to the right leg panel above the right leg panel bottom end, and a padded left side weights pocket fixedly attached to the left leg panel above the left leg panel bottom end, the right side and the left side weights pockets further comprising a plurality of stretchable weight sleeves for holding one or more weights, each of said stretchable weight sleeves having a horizontal sleeve opening located medially for receiving one or more of these weights.

BRIEF SUMMARY OF DRAWINGS

[0047] The accompanying drawings, which are incorporated in and constitute a part of the specification, illustrate preferred embodiments of the invention. These drawings, together with the general description of the invention given above and the detailed description of the preferred embodiments given below, serve to explain the principles of the invention.

[0048] FIG. 1 illustrates a perspective view of an embodiment of a weighted exercise pants system of the present disclosure as being worn on a person.

[0049] FIG. 2 illustrates a perspective front view of an embodiment of a weighted exercise pants system of the present disclosure as being worn on a person.

[0050] FIG. 3 illustrates a perspective rear view of an embodiment of a weighted exercise pants system of the present disclosure as being worn on a person.

[0051] FIG. 4 illustrates a perspective right side view of an embodiment of a weighted exercise pants system of the present disclosure as being worn on a person.

[0052] FIG. 5 illustrates a perspective left side view of an embodiment of a weighted exercise pants system of the present disclosure as being worn on a person.

[0053] FIG. 6 is a cross-sectional view, taken along line 6-6 of FIG. 3, of the lumbar region of an embodiment of a weighted exercise pants system of the present disclosure as being worn on a person.

[0054] FIG. 7 illustrates a perspective front view of an embodiment of a weighted exercise pants system of the present disclosure as being worn on a person showing the left side pocket flap open to illustrate how weights are secured therein.

[0055] FIG. 8 is a cross-sectional view, taken along line 6-6 of FIG. 7, of the pocket region of an embodiment of a weighted exercise pants system of the present disclosure as being worn on a person.

[0056] FIG. 9 illustrates a weight pocket system of the present disclosure.

[0057] FIG. 10 illustrates another weight pocket system of the present disclosure.

[0058] It will be appreciated that the foregoing drawings illustrate only certain embodiments of the invention and that numerous other variations may be created within the scope of the described invention.

DETAILED DESCRIPTION OF INVENTION

[0059] The above general description and the following detailed description are merely illustrative of the subject invention and additional modes, advantages and particulars of this invention will be readily suggested to those skilled in the art without departing from the spirit and scope of the invention.

[0060] Referring now to the figures, there is depicted a weighted exercise pant 10 having a waist section 12, lumbar section 14, left leg panel section 28, right leg panel section 30, central expansion section 16 and weights pockets 40, 50. The lumbar section 14 has a lumbar section right side seam 14a, lumbar section left side seam 14b, lumbar section upper edge 14c, lumbar section lower edge 14d, lumbar section outer layer 14e, lumbar section inner layer 14f, and a padding layer 15a, between the lumbar section outer and inner layers 14e and 14f.

[0061] The lumbar section 14 connects at its right and left seams 14a, 14b to the right and left portions of the waist section 12. The waist section, along with the lumbar section, provide the user with comfort and support. The inner and outer layers 14f, 14e of the lumbar section 14 are preferably constructed of a durable fabric, such as nylon, or a 2-ply nylon. The foam layer 15a is made of suitable foam padding materials, such as neoprene-type materials. The thickness of the foam layer 15a can be varied, for example, one embodiment uses foam ranging between 1/4" to 1" in thickness. Preferably, the waist section 12 is also provided with an internal foam layer much like with the lumbar section 14. The waist section 12 can be constructed of similar materials as with the lumbar section 14.

[0062] The weighted exercise pant 10 can also employ a belt 24 (of any desired variety and width) that can be secured to the waist/lumbar section via one or more belt loops 22. The belt loops 22 can be sewn directly to the waist/lumbar sections, or along its lower seam 22a (attachment point). The belt 24 can be tightened and secured with any suitable belt buckle or clasps 26, such as side release buckles, contoured molding plastic buckles, tongue buckles, cam buckles, backpack buckles, strap adjuster buckles, spring buckles, D-rings, O-rings, triangle rings, triglides, tension locks, in metal or plastic. The belt 24 (which can be of any suitable material, such as leather, nylon, polypropylene, or other durable webbing strap material, and the like) can assist in securing support for the user around the waist and lumbar regions. In the embodiment shown, the belt 24 is depicted as an independent belt, sitting within belt loops 22, but in other embodiments, the belt could be integral with the waist section 12, or built into the waist section.

[0063] The waist section 12 and lumbar section 14 are connected to the lower section (leg panels 28, 30) at the waist seam 32. The waist/lumbar sections 12, 14 provide support for the pants as well by securing the pants to the user so that the weight of the pants is transferred to the hip region of the user.

[0064] The exercise pants further comprise a left leg panel section 28 and a right leg panel section 30 joined together medially by a central expansion section 16. Preferably, the leg panels 28, 30, are constructed of a durable, lightweight fabric such as 2-ply nylon. To permit some flexibility in the design, the central expansion section is preferably constructed of a stretch-type material or fabric, such as spandex, or the “Lycra” brand of stretch material.

[0065] The central expansion section 16 comprises a central expansion section left seam front top 16a, a central expansion section right seam front top 16c, a central expansion section left seam rear top 16d, a central expansion section right seam rear top 16f, and a central expansion section left seam rear bottom 16g.
right seam rear top 16d, a central expansion section left seam 16e, a central expansion section right seam 16f, a central expansion section crotch section 16g, a central expansion section front top edge 16h and a central expansion section rear top edge 16i. The central expansion section right seam 18 and central expansion section left seam 20 connect the central expansion section 16 to the respective right and left leg panels 30, 28. In one embodiment, the central expansion section front top edge 16h (the distance between seam tops 16a and 16b) is narrower than the central expansion section rear top edge 16i (the distance between seam tops 16c and 16d).

[0066] In the embodiment shown in FIG. 1, the waist section 12 terminates above the respective central expansion section left seam front top 16a and right seam front top 16b, thereby leaving a gap in the waist section above the central expansion section front top edge. In other embodiments, the waist section 12 could extend across the top of central expansion section front top edge.

[0067] The left leg panel 28 may be of unitary construction or constructed from a number of separate panels or sections joined by left leg panel seams 29. Similarly, the right leg panel 30 may be of unitary construction or constructed from a number of separate panels or sections joined by right leg panel seams 31.

[0068] The right leg panel lower edge 33 and left leg panel lower edge 34 can be modified to include additional elastic or stretch material, or otherwise be a hemmed edge. It is preferred that the length of the leg panels are such that edges 33 and 34 fall above the user's knees.

[0069] Each leg panel is further equipped with a permanently attached weight pocket. More particularly, the right side leg panel 30 further comprises a right side weights pocket 40 having a plurality of weight sleeves 44 integral to the right side leg weights pocket 40. A right side pocket sleeve seam 40e may be employed to separate adjacent sleeves 44. At the top of each sleeve 44 is an opening capable 44a of receiving one or more weights 60. Above the openings is a right side weight pocket flap 42 having a right side weight pocket flap upper edge seam 42a, a right side weight pocket flap front inside edge 42b, a right side weight pocket flap rear inside edge 42c, and a right side weight pocket flap lower edge 42d. The right side weights pocket 40 also has a right side pocket upper edge 40a, right side pocket front inner edge 40b, right side pocket rear inner edge 40c, right side pocket lower edge 40d, and right side pocket sleeve seam 40e.

[0070] Similarly, the left side leg panel 28 further comprises a left side weights pocket 50 having a plurality of weight sleeves 54 integral to the left side weights pocket 50. A left side pocket sleeve seam 50e may be employed to separate adjacent sleeves 54. At the top of each sleeve 54 is an opening 54a capable of receiving one or more weights 60. Above the openings 54a is a left side weight pocket flap 52 having a left side weight pocket flap upper edge seam 52a, a left side weight pocket flap front inside edge 52b, a left side weight pocket flap rear inside edge 52c, and a left side weight pocket flap lower edge 52d. The left side weights pocket 50 also has a left side pocket upper edge 50a, left side pocket front inner edge 50b, left side pocket rear inner edge 50c, left side pocket lower edge 50d, and left side pocket sleeve seam 50e.

[0071] In a preferred embodiment, the weight pockets 40, 50 contain a layer of padding 15b to serve as a cushion or shock absorber between the user's legs and the weights 60. The pocket padding 15b can also serve to provide some stability to the weight pockets 40, 50 and to provide increased comfort to the user. The pocket construction can be varied. For example, referring to FIG. 9, the pocket member contains a pocket backing material 43 that is sewn on or otherwise fixably attached to the pants leg panel. In one embodiment, foam padding 15b is placed between the pocket backing material and the pants panel, and then the pocket backing is sewn or fixably attached to the pant leg. In another embodiment, such as shown in FIG. 8, the foam padding 15b could be attached in its own enclosure 43a to the back of the pocket backing material 43 prior to the pocket being attached to the pant leg panel.

[0072] In another embodiment, shown in FIG. 10, a weight pocket design 70 is shown employing a plurality of weight sleeves 74 separated by seams 70e. Each weight sleeve 74 comprises a stretchable fabric tube containing a slit 72 capable of receiving into it one or more weights 60. The weights, once inserted through the slits 72, sit within the interior tube space 71. This weight pocket design 70 could be employed on the weighted exercise pants device 10 discloses herein by affixing the plurality of weight sleeves 74 onto the face of the pant leg panels so that the slits 72 fact outward to permit the user to add or subtract weights from the exercise pants without the need to remove them.

[0073] The various seams, 50c, 50d, 50e can be single stitched, but are preferably double stitched for added strength.

[0074] The weights 60 used in connection with the present disclosure can be any suitable weight. In a preferred embodiment, the weights 60 comprise small bags filled with dense granular material such as steel shot or sand, in amounts of desired weight, such as 1 lb or 2 lbs bags. In another embodiment, the weights could be rubber coated iron (or other metal) bars. In yet another embodiment, the weights could be a flexible, dense weight bar material such as that described above by Cook. In one embodiment, the exercise pants are outfitted with 6 weight sleeves, with each sleeve capable of receiving up to 2 lbs of weight, but other variations are possible.

[0075] Additionally, the weight pocket flaps 42, 52 may be outfitted with various enclosures (not shown), if desired, to secure the flap down over the top of the weight sleeve openings. For example, various enclosure devices could be used, such as, a hook and loop fastener (such as sold under the “Velcro” trademark), a snap, a zipper, a clasp, a button, or other suitable fastener.

[0076] In a preferred embodiment, the weight pockets 40, 50 extend around approximately ¼ of the circumference of each respective pant leg panel 30, 28, respectively, so that there are no weights protruding in the zone between adjacent legs beneath the central expansion section crotch region 16g. With this design, there is sufficient space between, e.g., the right side pocket flap inner edges 40b and 40c, and the left side pocket flap inner edges 50b and 50c to reduce the potential for chaffing caused by weights from opposite legs rubbing against each other.

[0077] Additionally, the hockey pants structures described herein could be modified to advantage by adding weight pocket members, such as those disclosed herein, to the external surface of such hockey pants. These modified hockey pants could be further modified to remove impact protection pads.

[0078] The adjustable weight exercise pants of the present disclosure can be used by any person, regardless of whether
the person is at a beginner, intermediate, or advanced workout or fitness level. The exercise pants can be used in any level of physical activity ranging from walking to sprinting, specific sports practices (such as, for example, basketball, football, hockey, tennis, volleyball, baseball, cycling, soccer), hiking, skating, biking, skating, stationary biking, treadmill workouts, stair or stepper workouts, core workouts, etc. The ability to easily adjust the amount of weight carried in the exercise pants provides great flexibility in tailoring the exercise pants to the desired level of weight. The desired level of weight can depend on any number of factors, including, the level of fitness of the person using the pants and the type of workout desired, and can be easily increased or decreased during use. Additionally, the added weight increases the work intensity and resistance therefore burning more calories even while walking or doing simple household chores. The comfortable and fitted design makes it easy to wear and the increased weight helps tone and sculpt core muscles as well as legs and buttocks. The exercise pants can be used while engaging in regular workouts (squats, leg lifts, push-ups) as well as, spinning and running. The unique sleek design of the exercise pants can also assist in correcting a person’s running form.

[0079] This specification is to be construed as illustrative only and is for the purpose of teaching those skilled in the art the manner of carrying out the invention. It is to be understood that the forms of the invention herein shown and described are to be taken as the presently preferred embodiments. As already stated, various changes may be made in the shape, size and arrangement of components or adjustments made in the steps of the method without departing from the scope of this invention. For example, equivalent elements may be substituted for those illustrated and described herein and certain features of the invention may be utilized independently of the use of other features, all as would be apparent to one skilled in the art after having the benefit of this description of the invention. Further modifications and alternative embodiments of this invention will be apparent to those skilled in the art in view of this specification.

We claim:

1. Adjustable weight exercise pants comprising:
   a. a right leg panel having a top end and a bottom end,
   b. a left leg panel having a top end and a bottom end,
   c. a central expansion section disposed between and connected to said right and left leg panels to form a pants structure having an upper, central pants opening, a lower right leg opening disposed at the bottom end of said right leg panel, a lower left leg opening disposed at the bottom end of said left leg panel, a front side and a back side, said central expansion section being constructed of a stretchable fabric, said left and right leg panels being constructed of a less stretchable fabric than said central expansion section fabric;
   d. a padded waist section attached to said upper, central pants opening, said padded waist section comprising a right and left side girdle section and a lumbar support section located between said right and left side girdle sections, said lumbar support section being located on said pants structure back side;
   e. a belt fastening device for adjusting the tightness of said padded waist section when worn by a user,
   f. a padded weight pocket system comprising a padded right side weights pocket fixably attached to said right leg panel above said right leg panel bottom end, and a padded left side weights pocket fixably attached to said left leg panel above said left leg panel bottom end, said right side and said left side weights pockets further comprising a plurality of weight sleeves for holding one or more weights, each of said weight sleeves having a sleeve opening for receiving said one or more weights, and pocket flaps for covering said sleeve openings, and
   g. one or more weights removably receivable into said weight sleeves.

2. The weighted exercise pants of claim 1 wherein the weights are selected from the group consisting of: 0.5-2 lb rigid bar-style weights, 0.5-2 lb bag-style weights, and 0.5-2 lb flexible bar-style weights.

3. The weighted exercise pants of claim 1 wherein the weights comprise bags filled with dense granular material.

4. The weighted exercise pants of claim 3 wherein the dense granular material is steel shot or sand.

5. The weighted exercise pants of claim 1 wherein said plurality of weight sleeves comprises 6 weight sleeves.

6. The weighted exercise pants of claim 1 wherein said pants structure is a hockey pants structure.

7. The weighted exercise pants of claim 1 wherein said right leg panel members are constructed of single layer of nylon, said central expansion section is constructed of spandex material, said padded waist section is constructed of a 2-ply nylon shell surrounding a layer of neoprene-type foam, and weight sleeves are constructed of nylon and said pocket padding comprises neoprene-type foam.

8. Adjustable weight exercise pants comprising:
   a. a right leg panel having a top end and a bottom end,
   b. a left leg panel having a top end and a bottom end,
   c. a central expansion section disposed between and connected to said right and left leg panels to form a pants structure having an upper, central pants opening, a lower right leg opening disposed at the bottom end of said right leg panel, a lower left leg opening disposed at the bottom end of said left leg panel, a front side and a back side, said central expansion section being constructed of a stretchable fabric, said left and right leg panels being constructed of a less stretchable fabric than said central expansion section fabric;
   d. a padded waist section attached to said upper, central pants opening, said padded waist section comprising a right and left side girdle section and a lumbar support section located between said right and left side girdle sections, said lumbar support section being located on said pants structure back side;
   e. a belt fastening device for adjusting the tightness of said padded waist section when worn by a user,
   f. a padded weight pocket system comprising a padded right side weights pocket fixably attached to said right leg panel above said right leg panel bottom end, and a padded left side weights pocket fixably attached to said left leg panel above said left leg panel bottom end, said right side and said left side weights pockets further comprising a plurality of stretchable weight sleeves for holding one or more weights, each of said stretchable weight sleeves having a horizontal sleeve opening located medially for receiving said one or more weights, and
   g. one or more weights removably receivable into said weight sleeves.

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