DESCRIPTION

SWIMWEAR

Technical Field

[0001] The present invention relates to a swimsuit, and more particularly relates to a swimsuit that covers at least a portion of the hips and the thighs of a wearer when worn.

Background Art

[0002] In swimming, especially in competitive swimming, there is a demand for swimsuits that are designed to reduce water resistance. The water resistance includes form resistance that is dependent on the body shape of a swimmer, and other types of resistance. Patent Document 1 discloses a swimsuit that includes a tightening portion in a region that covers a portion of the gluteus maximus and the hamstrings to thereby suppress the form resistance caused by the position of the waist or the legs becoming lower than the position of the upper body during swimming, and thus improves sports performance. Patent Document 2 proposes a swimsuit that includes a tension band extending along the outside of a thigh region of the swimsuit to a hip region of the swimsuit and inwardly from the hip region across an upper glute region of the swimsuit towards a mid-line of the swimsuit, to thereby improve the property of helping the swimmer maintain a correct body position.

Prior Art Documents

Patent Documents

[0003] [Patent Document 1] JP 2014-91894A

[Patent Document 2] JP 2017-525864T

Disclosure of Invention

Problem to be Solved by the Invention

[0004] However, the swimsuits of Patent Documents 1 and 2 are required to provide not only the effect of stabilizing the posture in water but also an effect of supporting

the movements of the hamstrings.

[0005] To address the above-described problems, embodiments of the present invention provide a swimsuit that can stabilize the posture in water and support the movements of the hamstrings.

Means for Solving Problem

[0006] According to an aspect of the present invention , there is provided a swimsuit that is made of a stretchable fabric and covers at least a portion of the thighs and the hips when worn, wherein two or more band-like tightening portions are arranged so as to extend in the body length direction from each of the left and right hips to the corresponding thigh such that the tightening portions intersect each other, an intersection of the two or more band-like tightening portions is located between the top of the hip and proximal 1/3 of the hamstrings and located in a region that covers a portion of the hamstrings, the intersection of the two or more band-like tightening portions has a tensile modulus of elasticity in the body length direction of 220×10^{-5} N/mm^2 or more and 420×10^{-5} N/mm^2 or less, as measured based on Method A of JIS L 1096 8.14.

[0007] In an embodiment of the present invention, the tightening portions are each formed by bonding a piece of tension tape to a stretchable fabric that constitutes a main body of the swimsuit, and then bonding a tape-shaped stretchable fabric having a larger width than the tension tape to the stretchable fabric via the tension tape. In an embodiment, the tension tape and the tape-shaped stretchable fabric are located on the inside of the swimsuit. In an embodiment, the intersection of the two or more band-like tightening portions is located in a region that covers a portion of the biceps femoris and/or the semitendinosus.

[0008] In an embodiment of the present invention, the stretchable fabric has a tensile modulus of elasticity in the body length direction of 140×10^{-5} N/mm^2 or more and 200×10^{-5} N/mm^2 or less, as measured based on Method A of JIS L 1096 8.14. In an embodiment, the tightening portions have a tensile modulus of elasticity in the body length direction of 160×10^{-5} N/mm^2 or more and 220×10^{-5} N/mm^2 or less, as measured based on Method A of JIS L 1096 8.14.

Effects of the Invention

[0009] Embodiments of the present invention can provide a swimsuit that stabilizes the posture in water and supports the movements of the hamstrings.

Brief Description of Drawings

[0010] [FIG. 1] FIG. 1 schematically shows the inside (body surface side) of a swimsuit (of a half spats type for men) according to an embodiment of the present invention; FIG. 1(a) is a front view, FIG. 1(b) is a left side view, and FIG. 1(c) is a rear view.

[FIG. 2] FIG. 2 schematically shows the inside (body surface side) of a swimsuit (of a half spats type for men) according to another embodiment of the present invention; FIG. 2(a) is a front view, FIG. 2(b) is a left side view, and FIG. 2(c) is a rear view.

[FIG. 3] FIG. 3 schematically shows the inside (body surface side) of a swimsuit (of a half spats type for men) according to another embodiment of the present invention; FIG. 3(a) is a front view, FIG. 3(b) is a left side view, and FIG. 3(c) is a rear view.

[FIG. 4] FIG. 4 schematically shows the inside (body surface side) of a swimsuit (of a half spats type for men) according to another embodiment of the present invention; FIG. 4(a) is a front view, FIG. 4(b) is a left side view, and FIG. 4(c) is a rear view.

[FIG. 5] FIG. 5 schematically shows the inside (body surface side) of a swimsuit (of a half spats type for women) according to another embodiment of the present invention; FIG. 5(a) is a front view, FIG. 5(b) is a left side view, and FIG. 5(c) is a rear view.

[FIG. 6] FIG. 6 schematically shows the inside (body surface side) of a swimsuit (of a half spats type for women) according to another embodiment of the present invention; FIG. 6(a) is a front view, FIG. 6(b) is a left side view, and FIG. 6(c) is a rear view.

[FIG. 7] FIG. 7 schematically shows the inside (body surface side) of a swimsuit (of a half spats type for women) according to another embodiment of the present invention; FIG. 7(a) is a front view, FIG. 7(b) is a left side view, and FIG. 7(c) is

a rear view.

[FIG. 8] FIG. 8 schematically shows the inside (body surface side) of a swimsuit (of a half spats type for women) according to another embodiment of the present invention; FIG. 8(a) is a front view, FIG. 8(b) is a left side view, and FIG. 8(c) is a rear view.

[FIG. 9] FIG. 9 schematically illustrates the skin stretch of a region of the posterior lower body between the knees and the waist during swimming in the cases of the crawl (FIG. 9(a)), the butterfly (FIG. 9(b)), the backstroke (FIG. 9(c)), and the breaststroke (FIG. 9(d)).

[FIG. 10] FIG. 10 is a partial schematic view of the region of the posterior lower body between the knees and the waist, and shows the location of an intersection of two or more band-like tightening portions.

[FIG. 11] FIG. 11 schematically shows the inside (body surface side) of a swimsuit (of a half spats type for men) of Comparative Example 1; FIG. 11(a) is a front view, FIG. 11(b) is a left side view, and FIG. 11(c) is a rear view.

[FIG. 12] FIG. 12 schematically shows the inside (body surface side) of a swimsuit (of a half spats type for women) of Comparative Example 2; FIG. 12(a) is a front view, FIG. 12(b) is a left side view, and FIG. 12(c) is a rear view.

Description of the Invention

[0011] The inventors of the present invention have conducted in-depth research on a swimsuit that provides both the effect of stabilizing the posture in water and the effect of supporting the movements of the hamstrings. First, the skin stretch of the posterior lower body when swimming the crawl, butterfly, backstroke, and breaststroke was analyzed using a method disclosed in Japanese Patent No. 3831348. FIG. 9 shows the results. FIG. 9(a) shows the results in the case of the crawl, FIG. 9(b) the butterfly, FIG. 9(c) the backstroke, and FIG. 9(d) the breaststroke. In FIG. 9, 200 indicates the degree of skin stretch, and the degree of skin stretch increases from I toward II. As can be seen from FIG. 9, when swimming the various strokes, the degree of skin stretch was large in a region spanning from the top of the hip to the proximal 1/3 of the hamstrings. In a swimsuit of the present invention, two or more band-like tightening portions are arranged so as to extend in the body length direction

(also referred to as the "body height direction") from each of the left and right hips to the corresponding thigh such that the two or more band-like tightening portions intersect each other, and the intersection of the two or more band-like tightening portions (hereinafter, also referred to simply as the "intersection") is located in the region spanning from the top of the hip to the proximal 1/3 of the hamstrings, where the degree of skin stretch during swimming is large, as shown in FIG. 10. Thus, the swimsuit of the present invention can stabilize the posture in the water and support the movements of the hamstrings. For example, muscle load applied to the hip joint extensors including the gluteus maximus, the gluteus medius, the gluteus minimus, and the hamstrings, as well as the hip joint medial rotators including the semitendinosus, the semimembranosus, the gluteus medius (lateral side), the gluteus minimus (lateral side), and the tensor fasciae latae during swimming is reduced. The term "hamstrings" refers collectively to the biceps femoris, the semimembranosus, and the semitendinosus, which are located at the back of the thigh (the posterior side of the lower limb). As used herein, the expression "proximal 1/3 of the hamstrings" means a section of the hamstrings up to a distance of 100%/3 from the proximal end of the hamstrings, provided that the length of the hamstrings in the body height direction from the proximal end to the distal end thereof is taken as 100%. Also, the expression "the top of the hip" means a section at a distance of 100%/2 from the lower end of the gluteus maximus, provided that the length of the gluteus maximus in the body height direction from the upper end to the lower end thereof is taken as 100%.

[0012] In the present invention, the term "stretchable fabric" means that the fabric has an elongation percentage of more than 0% in the body length direction. In the present invention, the elongation percentage of fabric is measured based on Method A of JIS L 1096 8.14.1 (under a load of 17.6N, at a tensile speed of 200 mm/min).

[0013] The tightening portions have a higher tightening force, or in other words, a higher tensile modulus of elasticity in the body length direction, than the other portions. In the swimsuit of the present invention, the tensile modulus of elasticity of the tightening portions is higher than that of the stretchable fabric, which constitutes the main body of the swimsuit, and in the tightening portions, the intersection has the highest tensile modulus of elasticity. In the present invention, the tensile modulus of elasticity is measured based on Method A of JIS L 1096 8.14., or specifically, a piece of a

fabric is fixed to a tensile tester such that the piece of the fabric has a width of 5 cm and a length of 10 cm, and then elongated, and the tensile modulus of elasticity (N/mm^2) of the fabric is determined from the gradient of stress at 5% elongation. The length of the piece of the fabric means the size thereof in a direction corresponding to the measurement direction. For example, in the case where the tensile modulus of elasticity in the body length direction is to be measured, the length of the piece of the fabric means the size of the piece of the fabric in the body length direction, and in the case where the tensile modulus of elasticity in the body width direction is to be measured, the length of the piece of the fabric means the size of the piece of the fabric in the body width direction.

[0014] The tensile modulus of elasticity of the stretchable fabric in the body length direction is not particularly limited, but is preferably 140×10^{-5} N/mm^2 or more and 200×10^{-5} N/mm^2 or less, more preferably 150×10^{-5} N/mm^2 or more and 190×10^{-5} N/mm^2 or less, and even more preferably 160×10^{-5} N/mm^2 or more and 180×10^{-5} N/mm^2 or less. With the stretchable fabric having a tensile modulus of elasticity within the above-described range, the swimsuit has favorable wearability and also has an improved fit.

[0015] There is no particular limitation on the stretchable fabric, and any stretchable fabrics that are usually used for swimsuits can be used. For example, a one-way or two-way woven or knitted fabric containing an elastic thread is preferably used. Preferably, the elastic thread is at least one selected from polyurethane-based elastic threads and polyester-based elastic threads. The reason for this is that such elastic threads have high stretchability and is therefore suitable for sports clothing. The elastic thread may be used as a bare yarn (bare thread) combined with a non-elastic thread (rigid thread), or as a covered yarn in which the surface of the elastic thread is coated with a polyester fiber or a nylon fiber. Moreover, the stretchable fabric may be a double cloth.

[0016] The stretchable fabric preferably has a basis weight within a range of 50 g/m^2 or more and 400 g/m^2 or less, more preferably 80 g/m^2 or more and 300 g/m^2 or less, and even more preferably 100 g/m^2 or more and 200 g/m^2 or less. A stretchable fabric having a basis weight within the above-described range does not cause a see-through problem and other problems, is aesthetically suitable, and has excellent wearability

without creating a sensation of heaviness.

[0017] The tightening portions preferably have a tensile modulus of elasticity in the body length direction of 160×10^{-5} N/mm^2 or more and 220×10^{-5} N/mm^2 or less, more preferably 165×10^{-5} N/mm^2 or more and 200×10^{-5} N/mm^2 or less, and even more preferably 170×10^{-5} N/mm^2 or more and 190×10^{-5} N/mm^2 or less. The intersection of the tightening portions preferably has a tensile modulus of elasticity in the body length direction of 220×10^{-5} N/mm^2 or more and 420×10^{-5} N/mm^2 or less, more preferably 240×10^{-5} N/mm^2 or more and 400×10^{-5} N/mm^2 or less, and even more preferably, 260×10^{-5} N/mm^2 or more and 380×10^{-5} N/mm^2 or less. When the tightening portions and their intersection have tensile moduli of elasticity in the body length direction within the above-described ranges, the swimsuit is easy to put on, and the effect of supporting the movements of the hamstrings, for example, during a kicking motion or the like, also improves. The tensile modulus of elasticity in the body length direction of the tightening portions is measured by cutting a piece of fabric (with a width of 5 cm and a length of 15 cm) containing a single band-like tightening portion from a portion of the swimsuit in which the tightening portion other than the intersection is arranged, and performing measurement using the cut piece of fabric as a measurement sample. For example, a piece of fabric is cut from a portion indicated by reference numeral 300 in FIG. 1, and used for measurement of the tensile modulus of elasticity of the tightening portions. The tensile modulus of elasticity in the body length direction of the intersection of the tightening portions is measured by cutting a piece of fabric (with a width of 5 cm and a length of 15 cm) containing the intersection of the tightening portions from a portion of the swimsuit in which the intersection of the tightening portions is arranged, and performing measurement using the cut piece of fabric as a measurement sample. For example, a piece of fabric is cut from a portion indicated by reference numeral 400 in FIG. 1, and used for measurement of the tensile modulus of elasticity of the intersection of the tightening portions.

[0018] The tightening portions are arranged in a band-like form so as to extend in the body length direction from each of the left and right hips to the corresponding thigh. Two or more tightening portions, for example, two, three, or four, or another number of tightening portions can be arranged so as to extend in the body length direction from each of the left and right hips to the corresponding thigh such that their intersection is

located in the region spanning from the top of the hip to the proximal 1/3 of the hamstrings, and there is no particular limitation on the number of tightening portions. From the viewpoint of the comfort in wearing, it is preferable that two tightening portions are arranged so as to extend from each of the left and right hips to the corresponding thigh. When two tightening portions are arranged so as to extend from each of the left and right hips to the corresponding thigh, the tightening portions extending from each of the left and right hips to the corresponding thigh form a substantially X shape.

[0019] The tightening portions may extend to the waist. In this case, the posture in water can be more effectively stabilized. The tightening portions may extend to the lower end of the swimsuit. In this case, the posture in water can be more effectively stabilized. In order to more effectively stabilize the posture in water, it is preferable that at least one of the tightening portions is arranged so as to pass through a surrounding region of the sacrum. In order to more effectively stabilize the posture in water and support the movements of the hamstrings, it is preferable that the intersection of the tightening portions is located in a region that covers a portion of the hamstrings, and is more preferably located in a region that covers a portion of the biceps femoris and/or the semitendinosus.

[0020] Although the method for forming the tightening portions is not particularly limited, each tightening portion can be formed by, for example, bonding a piece of tension tape (also referred to as a tension band) to the stretchable fabric, which constitutes the main body of the swimsuit, such that the longitudinal direction of the tension tape matches the body length direction, and then bonding a tape-shaped stretchable fabric having a larger width than the tension tape to the stretchable fabric via the tension tape such that the tape-shaped stretchable fabric covers the tension tape and the longitudinal direction of the tape-shaped stretchable fabric matches the body length direction. In order to reduce the form resistance, the tension tape and the tape-shaped stretchable fabric are preferably located on the inside (body surface side) of the swimsuit. Bonding the tape-shaped stretchable fabric to the stretchable fabric via the tension tape increases the durability of the tightening portion and can prevent the tension tape from falling off from the main body of the swimsuit. In order to reduce the skin friction, for example, it is preferable that the tension tape and the

tape-shaped stretchable fabric have a width of 5 mm or more and 30 mm or less, and more preferably 10 mm or more and 20 mm or less. The tension tape and the tape-shaped stretchable fabric are bonded preferably through adhesion using a hot melt adhesive. Examples of the hot melt adhesive include, but are not particularly limited to, a sheet-type hot melt adhesive, a nonwoven fabric-type hot melt adhesive, and a liquid-type hot melt adhesive.

[0021] There is no particular limitation on the tension tape, and either of a knitted fabric and a woven fabric may be used. For example, various types of commercially available tension bands can be selected and used as appropriate. The tensile modulus of elasticity in the body length direction, which matches the longitudinal direction of the tension tape, of the tension tape is not particularly limited, but is preferably 5×10^{-5} N/mm^2 or more and 30×10^{-5} N/mm^2 or less, and more preferably 10×10^{-5} N/mm^2 or more and 20×10^{-5} N/mm^2 or less, for the purpose of making it likely that the tightening portions have a tensile modulus of elasticity in the body length direction of 160×10^{-5} N/mm^2 or more and 220×10^{-5} N/mm^2 or less.

[0022] The elongation percentage in the body length direction of the stretchable fabric constituting the main body of the swimsuit is not particularly limited, but is preferably 15% or more and 75% or less, more preferably 20% or more and 65% or less, and even more preferably 25% or more and 55% or less, from the viewpoint of wearability and an improved fit, for example. The elongation percentage in the body width direction (also referred to as the "circumferential direction") of the stretchable fabric constituting the main body of the swimsuit is not particularly limited, but is preferably 30% or more and 75% or less, and more preferably 35% or more and 65% or less, from the viewpoint of wearability and an improved fit, for example. The elongation percentage in the body length direction of the tape-shaped stretchable fabric is not particularly limited, but is preferably 30% or more and 80% or less, more preferably 35% or more and 75% or less, and even more preferably 40% or more and 70% or less, from the viewpoint of wearability and the tightening force, for example. The elongation percentage in the body width direction of the tape-shaped stretchable fabric is not particularly limited, but is preferably 20% or more and 65% or less, and more preferably 25% or more and 60% or less, from the viewpoint of wearability and the tightening force, for example.

[0023] The type of the swimsuit of the present invention is not particularly limited as long as the swimsuit covers at least a portion of the thighs and the hips when worn. Any of a half spats type, a long spats type (spats type), a short john one-piece type, a long john one-piece type, and a full body one-piece type may be adopted.

[0024] A swimsuit is usually worn in a state of being in substantially close contact with the body surface of the wearer. In order to realize the state of "being in substantially close contact", a swimsuit is formed to have girths that are 50% or more and 110% or less, and more preferably 70% or more and 95% or less, and a length that is 75% or more and 100% or less, and more preferably 85% or more and 100% or less, of the size of a naked human body. It goes without saying that the size of the human body varies between individuals, and therefore, the above-described percentages are a rough indication. More specifically, the size of the swimsuit is determined in conformity with the JASPO standard.

[0025] Hereinafter, descriptions will be given using the drawings. FIG. 1 schematically shows the inside (body surface side) of a swimsuit according to an embodiment of the present invention; FIG. 1(a) is a front view, FIG. 1(b) is a left side view, and FIG. 1(c) is a rear view. A swimsuit 1 is a swimsuit of a half spats type for men. As shown in FIG. 1(c), two band-like tightening portions 2 and 3 (hereinafter, also referred to as the "posterior lower body above-knee tightening portions") are arranged so as to extend in the body length direction from each of the left and right hips to the corresponding thigh such that the band-like tightening portions 2 and 3 intersect each other, and an intersection 4 of the tightening portions 2 and 3 is located between the top of the hip and proximal 1/3 of the hamstrings. The tightening portion 2 is arranged so as to extend from the waist, or specifically, an upper end portion of the swimsuit 1, to a medial portion of the thigh and also extend to a lower end portion of the swimsuit 1. The tightening portion 3 is arranged so as to extend from the waist, or specifically, the upper end portion of the swimsuit 1 to a medial portion of the thigh. In order to more effectively support the movements of the hamstrings, the intersection 4 is preferably located in a region that covers a portion of the hamstrings, and is more preferably located in a region that covers a portion of the biceps femoris and/or the semitendinosus.

[0026] Each of the tightening portions 2 and 3 is formed by bonding a piece of tension

tape (not shown) to a fabric 102 constituting the main body of the swimsuit 1 with a hot melt adhesive such that the longitudinal direction of the tension tape matches the body length direction, and then bonding a tape-shaped stretchable fabric 103 having a larger width than the tension tape to the fabric 102 via the tension tape with a hot melt adhesive such that tape-shaped stretchable fabric 103 covers the tension tape and the longitudinal direction of the tape-shaped stretchable fabric 103 matches the body length direction. The fabric 102 constituting a back portion of the main body of the swimsuit 1 and a fabric 101 constituting a front portion of the main body of the swimsuit 1 have different elongation percentages in the body length direction, and from the viewpoint of wearability and smooth movement of the knees, it is preferable that the elongation percentage in the body length direction of the fabric 101 is higher than that of the fabric 102. In order to stably maintain the positions of the hips and the hamstrings during swimming, it is preferable that the fabric 102 is a double cloth obtained by bonding two different types of fabrics to each other using a hot melt adhesive.

[0027] In order to stably maintain the position of the pelvis and surrounding portions, a configuration may be adopted in which a region of the swimsuit 1 that covers the groin is made of the fabric 102, which has a low elongation percentage in the body length direction, and tightening portions 5 (hereinafter, also referred to as the "groin tightening portions") are arranged in a V shape in regions that cover peripheral edge portions of the groin. Moreover, in order to prevent displacement of the swimsuit at the waist, a configuration may be adopted in which the swimsuit 1 has a string 6 that is arranged in the upper end portion thereof. The groin tightening portions 5 can also be formed by bonding a piece of tension tape (not sown) to the fabric 102, which constitutes the main body of the swimsuit, with a hot melt adhesive such that the longitudinal direction of the tension tape matches the body length direction, and then bonding a tape-shaped stretchable fabric 103 having a larger width than the tension tape to the fabric 102 via the tension tape with a hot melt adhesive such that the tape-shaped stretchable fabric 103 covers the tension tape and the longitudinal direction of the tape-shaped stretchable fabric 103 matches the body length direction.

[0028] In this embodiment, two posterior lower body above-knee tightening portions are provided on each of the left side and the right side; however, the number of

posterior lower body above-knee tightening portions provided on each side may be three or more, or four or more, or other numbers. From the viewpoint of wearability, in the circumferential direction of the hips, the total number of seams including the number of posterior lower body above-knee tightening portions, the number of stitch lines, the number of adhesion lines where the fabrics are bonded, and the like is preferably 9 or less. Also, from the viewpoint of wearability, in the circumferential direction of each of the left and right thighs between a crotch portion and an above-knee portion, the total number of seams including the number of posterior lower body above-knee tightening portions, the number of stitch lines, the number of adhesion lines where the fabrics are bonded, and the like is preferably 4 or less.

[0029] FIG. 2 schematically shows the inside (body surface side) of a swimsuit according to another embodiment of the present invention; FIG. 2(a) is a front view, FIG. 2(b) is a left side view, and FIG. 2(c) is a rear view. A swimsuit 11 is a swimsuit of a half spats type for men. As shown in FIG. 2(c), in the swimsuit 11 of this embodiment, two band-like tightening portions 12 and 13 are arranged so as to extend in the body length direction from each of the left and right hips to the corresponding thigh such that the band-like tightening portions 12 and 13 intersect each other, and an intersection 14 of the tightening portions 12 and 13 is located between the top of the hip and proximal 1/3 of the hamstrings. The tightening portion 12 is arranged so as to extend from the waist, or specifically, the upper end portion of the swimsuit 11, to a lateral portion of the thigh. The tightening portion 13 is arranged so as to extend from the waist, or specifically, the upper end portion of the swimsuit 11 to a medial portion of the thigh. The swimsuit 11 may have the same configuration as the swimsuit shown in FIG. 1, except for the arrangement of the tightening portions 12 and 13 as well as the intersection 14 of the tightening portions 12 and 13.

[0030] FIG. 3 schematically shows the inside (body surface side) of a swimsuit according to another embodiment of the present invention; FIG. 3(a) is a front view, FIG. 3(b) is a left side view, and FIG. 3(c) is a rear view. A swimsuit 21 is a swimsuit of a half spats type for men. As shown in FIG. 3(c), in the swimsuit 21 of this embodiment, two band-like tightening portions 22 and 23 are arranged so as to extend in the body length direction from each of the left and right hips to the corresponding thigh such that the band-like tightening portions 22 and 23 intersect each other, and

an intersection 24 of the tightening portions 22 and 23 is located between the top of the hip and proximal 1/3 of the hamstrings. The tightening portion 22 is arranged so as to extend from the waist, or specifically, the upper end portion of the swimsuit 21, to a lateral portion of the thigh and also extend to the lower end portion of the swimsuit 21. The tightening portion 23 is arranged so as to extend from the waist, or specifically, the upper end portion of the swimsuit 21 to a medial portion of the thigh. The swimsuit 21 may have the same configuration as the swimsuit shown in FIG. 1, except for the arrangement of the tightening portions 22 and 23 as well as the intersection 24 of the tightening portions 22 and 23.

[0031] In the swimsuit 21 of this embodiment, in order to allow the knees to move smoothly, a fabric 104 that constitutes a region between the tightening portion 22 and the tightening portion 23, of a region that covers the thigh, preferably has a higher elongation percentage in the body length direction than the fabric 102. In other embodiments as well, a fabric having a higher elongation percentage in the body length direction than the fabric 102 may be used as the fabric that constitutes the region between the tightening portion 22 and the tightening portion 23.

[0032] FIG. 4 schematically shows the inside (body surface side) of a swimsuit according to another embodiment of the present invention; FIG. 4(a) is a front view, FIG. 4(b) is a left side view, and FIG. 4(c) is a rear view. A swimsuit 31 is a swimsuit of a half spats type for men. As shown in FIG. 4(c), in the swimsuit 31 of this embodiment, two band-like tightening portions 32 and 33 are arranged so as to extend in the body length direction from each of the left and right hips to the corresponding thigh such that the band-like tightening portions 32 and 33 intersect each other, and an intersection 34 of the tightening portions 32 and 33 is located between the top of the hip and proximal 1/3 of the hamstrings. The tightening portion 32 is arranged so as to extend from the waist, or specifically, the upper end portion of the swimsuit 31, to a medial portion of the thigh and also extend to the lower end portion of the swimsuit 31. Moreover, the left and right tightening portions 32 intersect each other at an upper middle portion of the hips. The tightening portion 33 is arranged so as to extend from the waist, or specifically, the upper end portion of the swimsuit 31 to a medial portion of the thigh. The swimsuit 31 may have the same configuration as the swimsuit shown in FIG. 1, except for the arrangement of the tightening portions 32 and 33 as

well as the intersection 34 of the tightening portions 32 and 33.

[0033] FIG. 5 schematically shows the inside (body surface side) of a swimsuit according to another embodiment of the present invention; FIG. 5(a) is a front view, FIG. 5(b) is a left side view, and FIG. 5(c) is a rear view. A swimsuit 41 is a swimsuit of a half suit type for women. As shown in FIG. 5(c), two band-like tightening portions 42 and 43 are arranged so as to extend in the body length direction from each of the left and right hips to the corresponding thigh such that the band-like tightening portions 42 and 43 intersect each other, and an intersection 44 of the tightening portions 42 and 43 is located between the top of the hip and proximal 1/3 of the hamstrings. The tightening portion 42 is arranged so as to extend from the waist to a medial portion of the thigh and also extend to the lower end portion of the swimsuit 41. The tightening portion 43 is arranged so as to extend from the waist to a medial portion of the thigh. In order to more effectively support the movements of the hamstrings, the intersection 44 is preferably located in a region that covers a portion of the hamstrings, and is more preferably located in a region that covers a portion of the biceps femoris and/or the semitendinosus.

[0034] Each of the tightening portions 42 and 43 is formed by bonding a piece of tension tape (not shown) to a fabric 102 constituting the main body of the swimsuit 41 with a hot melt adhesive such that the longitudinal direction of the tension tape matches the body length direction, and then bonding a tape-shaped stretchable fabric 103 having a larger width than the tension tape to the fabric 102 via the tension tape with a hot melt adhesive such that tape-shaped stretchable fabric 103 covers the tension tape and the longitudinal direction of the tape-shaped stretchable fabric matches the body length direction. In the swimsuit 41, the fabrics 101 and 102 are similar to those described in relation to the swimsuit 1 shown in FIG. 1.

[0035] In order to stably maintain the position of a section from the trunk to the pelvis and surrounding portions, it is preferable that a region of the swimsuit 41 that covers the groin and the lower abdomen is made of the fabric 102, which has a low elongation percentage in the body length direction. Also, the swimsuit 41 may have groin tightening portions 35 that are arranged in a V shape in regions that cover peripheral edge portions of the groin. Moreover, the swimsuit 41 may have side tightening portions 36 that are arranged on lateral sides of the swimsuit. The groin

tightening portions 35 and the side tightening portions 36 can also be formed by bonding a piece of tension tape (not sown) to the fabric 102, which constitutes the main body of the swimsuit, with a hot melt adhesive such that the longitudinal direction of the tension tape matches the body length direction, and then bonding a tape-shaped stretchable fabric 103 having a larger width than the tension tape to the fabric 102 via the tension tape with a hot melt adhesive such that the tape-shaped stretchable fabric 103 covers the tension tape and the longitudinal direction of the tape-shaped stretchable fabric 103 matches the body length direction.

[0036] In this embodiment, two posterior lower body above-knee tightening portions are provided on each of the left side and the right side; however, the number of posterior lower body above-knee tightening portions provided on each side may be three or more, or four or more, or other numbers. From the viewpoint of wearability, in the circumferential direction of the hips, the total number of seams including the number of posterior lower body above-knee tightening portions, the number of stitch lines, the number of adhesion lines where the fabrics are bonded, and the like is preferably 11 or less. Also, from the viewpoint of wearability, in the circumferential direction of each of the left and right thighs between a crotch portion and an above-knee portion, the total number of seams including the number of posterior lower body above-knee tightening portions, the number of stitch lines, the number of adhesion lines where the fabrics are bonded, and the like is preferably 4 or less.

[0037] FIG. 6 schematically shows the inside (body surface side) of a swimsuit according to another embodiment of the present invention; FIG. 6(a) is a front view, FIG. 6(b) is a left side view, and FIG. 6(c) is a rear view. A swimsuit 51 is a swimsuit of a half spats type for women. As shown in FIG. 6(c), in the swimsuit 51 of this embodiment, two band-like tightening portions 52 and 53 are arranged so as to extend in the body length direction from each of the left and right hips to the corresponding thigh such that the band-like tightening portions 52 and 53 intersect each other, and an intersection 54 of the tightening portions 52 and 53 is located between the top of the hip and proximal 1/3 of the hamstrings. The tightening portion 52 is arranged so as to extend from the waist to a lateral portion of the thigh. The tightening portion 53 is arranged so as to extend from the waist to a medial portion of the thigh. The swimsuit 51 may have the same configuration as the swimsuit shown in FIG. 5, except

for the arrangement of the tightening portions 52 and 53 as well as the intersection 54 of the tightening portions 52 and 53.

[0038] FIG. 7 schematically shows the inside (body surface side) of a swimsuit according to another embodiment of the present invention; FIG. 7(a) is a front view, FIG. 7(b) is a left side view, and FIG. 7(c) is a rear view. A swimsuit 61 is a swimsuit of a half spats type for women. As shown in FIG. 7(c), in the swimsuit 61 of this embodiment, two band-like tightening portions 62 and 63 are arranged so as to extend in the body length direction from each of the left and right hips to the corresponding thigh such that the band-like tightening portions 62 and 63 intersect each other, and an intersection 64 of the tightening portions 62 and 63 is located between the top of the hip and proximal 1/3 of the hamstrings. The tightening portion 62 is arranged so as to extend from the waist to a lateral portion of the thigh and also extend to the lower end portion of the swimsuit 61. The tightening portion 63 is arranged so as to extend from the waist to a medial portion of the thigh. The swimsuit 61 may have the same configuration as the swimsuit shown in FIG. 5, except for the arrangement of the tightening portions 62 and 63 as well as the intersection 64 of the tightening portions 62 and 63.

[0039] In the swimsuit 61 of this embodiment, in order to allow the knees to move smoothly, a fabric 104 that constitutes a region between the tightening portion 62 and the tightening portion 63, of a region that covers the thigh, preferably has a higher elongation percentage in the body length direction than the fabric 102. In other embodiments as well, a fabric having a higher elongation percentage in the body length direction than the fabric 102 may be used as the fabric that constitutes the region between the tightening portion 22 and the tightening portion 23.

[0040] FIG. 8 schematically shows the inside (body surface side) of a swimsuit according to another embodiment of the present invention; FIG. 8(a) is a front view, FIG. 8(b) is a left side view, and FIG. 8(c) is a rear view. A swimsuit 71 is a swimsuit of a half spats type for women. As shown in FIG. 8(c), in the swimsuit 71 of this embodiment, two band-like tightening portions 72 and 73 are arranged so as to extend in the body length direction from each of the left and right hips to the corresponding thigh such that the band-like tightening portions 72 and 73 intersect each other, and an intersection 74 of the tightening portions 72 and 73 is located between the top of the

hip and proximal 1/3 of the hamstrings. The tightening portion 72 is arranged so as to extend from the waist to a medial portion of the thigh and also extend to the lower end portion of the swimsuit 71. Moreover, the left and right tightening portions 72 intersect each other at an upper middle portion of the hips. The tightening portion 73 is arranged so as to extend from the waist to a medial portion of the thigh. The swimsuit 71 may have the same configuration as the swimsuit shown in FIG. 5, except for the arrangement of the tightening portions 72 and 73 as well as the intersection 74 of the tightening portions 72 and 73.

[0041] The swimsuits shown in FIGS. 1 to 8 are preferred embodiments, in which the tightening portions are arranged on the inside (body surface side) of the swimsuits. However, the swimsuit of the present invention is not limited thereto. For example, all or some of the tightening portions may be arranged on the outside of the swimsuit.

Examples

[0042] Hereinafter, examples of the present invention will be described. However, the present invention is not limited thereto.

[0043] The following fabrics were used in the examples and comparative examples.

Fabric 101: A plain weave woven fabric having a basis weight of 133 g/m^2 was used. The fiber composition of the woven fabric was nylon fiber 65% and polyurethane elastic fiber 35%. A thread obtained by covering a polyurethane elastic fiber (fineness: 78 dtex) with a nylon fiber (fineness: 33 dtex, filament count: 10) was used as the warp. A thread obtained by covering a polyurethane elastic fiber (fineness: 55 dtex) with a nylon fiber (fineness: 33 dtex, filament count: 10) was used as the weft. The warp density (the number of ends) was 188 threads/inch, and the weft density (the number of picks) was 182 threads/inch. The fabric was used such that the warp extends in the circumferential direction. The fabric 101 had an elongation percentage in the body length direction of 41.7% and an elongation percentage in the body width direction of 35.2%.

Fabric 102: A double cloth was used. The face cloth was a woven fabric in which plain weave and double weave were combined, and had a basis weight of 138 g/m^2. The fiber composition of the woven fabric was nylon fiber 65% and polyurethane elastic fiber 35%. A thread obtained by covering a polyurethane elastic

fiber (fineness: 78 dtex) with a nylon fiber (fineness: 33 dtex, filament count: 10) was used as the warp. A thread obtained by covering a polyurethane elastic fiber (fineness: 55 dtex) with a nylon fiber (fineness: 33 dtex, filament count: 10) and a thread obtained by covering a polyurethane elastic fiber (fineness: 44 dtex) with a nylon fiber (fineness: 33 dtex, filament count: 10) were used as the weft. The warp density (the number of ends) was 184 threads/inch, and the weft density (the number of picks) was 188 threads/inch. The back cloth was a plain weave woven fabric, and had a basis weight of 114 g/m^2. The fiber composition of the woven fabric was nylon fiber 66% and polyurethane elastic fiber 34%. A thread obtained by covering a polyurethane elastic fiber (fineness: 55 dtex) with a nylon fiber (fineness: 24 dtex, filament count: 7) was used as the warp. A thread obtained by covering a polyurethane elastic fiber (fineness: 44 dtex) with a nylon fiber (fineness: 24 dtex, filament count: 7) was used as the weft. The warp density (the number of ends) was 219 threads/inch, and the weft density (the number of picks) was 187 threads/inch. The face cloth and the back cloth were bonded together along their cloth edges using a hot melt adhesive (product name: "J861" manufactured by UTAX. Co., Ltd.), and the resulting double cloth was used as the fabric 102. Note that both the face cloth and the back cloth were used such that the warp thereof extends in the circumferential direction. The fabric 102 had an elongation percentage in the body length direction of 30.9% and an elongation percentage in the body width direction of 56.8%.

Fabric 103: A plain weave woven fabric having a basis weight of 140 g/m^2 was used. The fiber composition of the woven fabric was nylon fiber 63% and polyurethane elastic fiber 37%. A thread obtained by covering a polyurethane elastic fiber (fineness: 78 dtex) with a nylon fiber (fineness: 33 dtex, filament count: 10) was used as the warp. A thread obtained by covering a polyurethane elastic fiber (fineness: 55 dtex) with a nylon fiber (fineness: 33 dtex, filament count: 10) was used as the weft. The warp density (the number of ends) was 178 threads/inch, and the weft density (the number of picks) was 180 threads/inch. The fabric was used such that the warp extends in the circumferential direction. The fabric 103 had an elongation percentage in the body length direction of 56.2% and an elongation percentage in the body width direction of 46.2%. Note that the elongation percentage of the fabrics was measured based on Method A of JIS L 1096 8.14.1 (under a load of 17.6N, at a tensile

speed of 200 mm/min).

Example 1

[0044]

A swimsuit 1 (M size according to the JASPO standard) of a half spats type for men like the one shown in FIG. 1 was produced using the fabrics 101, 102, and 103. As shown in FIG. 1(c), two band-like tightening portions 2 and 3 were arranged so as to extend in the body length direction from each of the left and right hips to the corresponding thigh such that the tightening portions 2 and 3 intersected each other and an intersection 4 of the tightening portions 2 and 3 was located between the top of the hip and proximal 1/3 of the hamstrings. Specifically, the tightening portion 2 was arranged so as to extend from the waist, or specifically, the upper end portion of the swimsuit 1, to a medial portion of the thigh and also extend to the lower end portion of the swimsuit 1. The tightening portion 3 was arranged so as to extend from the waist, or specifically, the upper end portion of the swimsuit 1, to a medial portion of the thigh. The intersection 4 was arranged so as to be located between the lower edge of the hip and a portion near the gluteal fold. As used herein, the term the "lower edge of the hip" means a section at a distance of 100%/4 from the lower end of the gluteus maximus, provided that the length of the gluteus maximus in the body height direction from the upper end to the lower end thereof is taken as 100%. Each of the tightening portions 2 and 3 was formed by first bonding a piece of tension tape ("RF-6200" manufactured by San Chemicals, Ltd., a knit made of a polyester-based fiber, width: 10 mm, modulus of elasticity in the body length direction: 17.5×10^{-5} N/mm^2) to the inside (body surface side) of the fabric 102 with a hot melt adhesive such that the longitudinal direction of the tension tape matched the body length direction, and then further bonding the fabric 103 that was cut into a tape-like shape having a width of 20 mm to the fabric 102 via the tension tape with a hot melt adhesive such that the fabric 103 covered the tension tape and the longitudinal direction of the tape-shaped stretchable fabric 103 matched the body length direction. Tightening portions 5 that were arranged in regions that covered the groin were also formed in a similar manner to that of the tightening portions 2 and 3. In the circumferential direction of the hips of the swimsuit of Example 1, the total number of seams including

the number of posterior lower body above-knee tightening portions, the number of stitch lines, and the number of adhesion lines where the fabrics were bonded was 9. Also, in the circumferential direction of each of the left and right thighs between a crotch portion and an above-knee portion, of the swimsuit of Example 1, the total number of seams including the number of posterior lower body above-knee tightening portions, the number of stitch lines, and the number of adhesion lines where the fabrics were bonded was 4 or less.

Example 2

[0045] A swimsuit 41 (M size according to the JASPO standard) of a half spats type for women like the one shown in FIG. 5 was produced using the fabrics 101, 102, and 103. As shown in FIG. 5(c), two band-like tightening portions 42 and 33 were arranged so as to extend in the body length direction from each of the left and right hips to the corresponding thigh such that the tightening portions intersected each other and an intersection 44 of the tightening portions 42 and 33 was located between the top of the hip and proximal 1/3 of the hamstrings. Specifically, the tightening portion 42 was arranged so as to extend from the waist to a medial portion of the thigh and also extend to the lower end portion of the swimsuit 41. The tightening portion 43 was arranged so as to extend from the waist to a medial portion of the thigh. The intersection 44 was arranged so as to be located between the lower edge of the hip and a portion near the gluteal fold. Each of the tightening portions 42 and 43 was formed by first bonding a piece of tension tape ("RF-6200" manufactured by San Chemicals, Ltd., a knit made of a polyester-based fiber, width: 10 mm, modulus of elasticity in the body length direction: 17.5×10^{-5} N/mm^2) to the inside (body surface side) of the fabric 102 with a hot melt adhesive such that the longitudinal direction of the tension tape matched the body length direction, and then further bonding the fabric 103 that was cut into a tape-like shape having a width of 20 mm to the fabric 102 via the tension tape with a hot melt adhesive such that the fabric 103 covered the tension tape and the longitudinal direction of the tape-shaped stretchable fabric 103 matched the body length direction. Tightening portions 35 that were arranged in regions that covered the groin and side tightening portions 36 that were arranged on the lateral sides of the swimsuit were also formed in a similar manner to that of the tightening portions 42

and 33. In the circumferential direction of the hips of the swimsuit of Example 2, the total number of seams including the number of posterior lower body above-knee tightening portions, the number of stitch lines, and the number of adhesion lines where the fabrics were bonded was 11. Also, in the circumferential direction of each of the left and right thighs between a crotch portion and an above-knee portion, of the swimsuit of Example 2, the total number of seams including the number of posterior lower body above-knee tightening portions, the number of stitch lines, and the number of adhesion lines where the fabrics were bonded was 4.

Comparative Example 1

[0046] A swimsuit 81 (M size according to the JASPO standard) of a half spats type for men like the one shown in FIG. 11 was produced using the fabrics 101, 102, and 103. As shown in FIG. 11(c), two band-like tightening portions 82 and 83 were arranged so as to extend in the body length direction from each of the left and right hips to the corresponding thigh such that the tightening portions 82 and 83 did not intersect each other. The tightening portion 82 was arranged so as to extend from the waist, or specifically, the upper end portion of the swimsuit 81, to a medial portion of the thigh, and the tightening portion 83 was arranged so as to extend from the waist, or specifically, the upper end portion of the swimsuit, to a medial portion of the thigh and also extend to the lower end portion of the swimsuit 81. The swimsuit of Comparative Example 1 had a similar configuration to that of the swimsuit of Example 1, except for the arrangement of the tightening portions 82 and 83.

Comparative Example 2

[0047] A swimsuit 91 (M size according to the JASPO standard) of a half spats type for women like the one shown in FIG. 12 was produced using the fabrics 101, 102, and 103. As shown in FIG. 12(c), two band-like tightening portions 92 and 93 were arranged so as to extend in the body length direction from each of the left and right hips to the corresponding thigh such that the tightening portions 92 and 93 did not intersect each other. The tightening portion 92 was arranged so as to extend from the waist to a medial portion of the thigh, and the tightening portion 93 was arranged so as to extend from the waist to a medial portion of the thigh and also extend to the

lower end portion of the swimsuit 91. The swimsuit of Comparative Example 2 had a similar configuration to that of the swimsuit of Example 2, except for the arrangement of the tightening portions 92 and 93.

[0048] As shown in FIG. 1(c), a piece of fabric 300 (for measurement of the tensile modulus of elasticity of the tightening portions) having a width of 5 cm and a length of 15 cm, a piece of fabric 400 (for measurement of the tensile modulus of elasticity of the intersection) having a width of 5 cm and a length of 15 cm, and a piece of fabric 500 (for measurement of the tensile modulus of elasticity of other portions) having a width of 5 cm and a length of 15 cm were cut from the swimsuit 1. Then, the tensile modulus of elasticity in the body length direction of the stretchable fabric, the tightening portions, and the intersection was measured. As shown in FIG. 11, a piece of fabric 600 (the two tightening portions) having a width of 5 cm and a length of 15 cm and containing the two tightening portions was cut from the swimsuit 81, and subjected to the measurement of tensile modulus of elasticity.

Measurement of Tensile Modulus of Elasticity

[0049]

The tensile modulus of elasticity was measured based on Method A of JIS L 1096 8.14., or specifically, a piece of a fabric was fixed to a tensile tester such that the piece of the fabric had a width of 5 cm and a length of 10 cm, and then elongated, and the tensile modulus of elasticity (N/mm^2) of the fabric in the body length direction was determined from the gradient of stress at 5% elongation.

[0050]

Table 1

	Tensile modulus of elasticity in body length direction (N/mm^2)			
	Tightening portion (single)	Intersection	Other portions	Tightening portions (two)
Ex. 1	252.63×10^{-5}	315.8×10^{-5}	179.8×10^{-5}	Unmeasured
Com. Ex. 1	252.63×10^{-5}	N/A	179.8×10^{-5}	277.2×10^{-5}

[0051] As can be seen from the data in Table 1, the tensile modulus of elasticity in the body length direction of the intersection of the two tightening portions, which was

arranged in the region where the skin was likely to stretch, was higher than the tensile modulus of elasticity in the body length direction in the case where the two tightening portions that did not intersect each other were provided. Thus, in the former case, it is possible to stabilize the posture in water and also effectively support the movements of the hamstrings.

[0052] The swimsuit of the Example 1 and the swimsuit of Comparative Example 1 were worn by eight male college students who were higher-ranked swimmers at national competitions, and the 12.5 m SLD swimming time was measured. Also, the swimsuits of Example 2 and Comparative Example 2 were worn by six female college students who were higher-ranked swimmers at national competitions, and the 15 m SLD swimming time was measured. Tables 2 and 3 show the results.

[0053]

Table 2

Male college student	Time (sec.)	
	Ex. 1	Com. Ex. 1
A	5.4	5.7
B	5.7	5.8
C	5.5	6.0
D	5.2	5.5
E	5.0	5.2
F	5.0	5.1
G	6.1	6.4
H	5.6	5.8
Average	5.44	5.67

[0054]

Table 3

Female college student	Time (sec.)	
	Ex. 1	Com. Ex. 1
I	15.4	15.6
J	13.5	13.7
K	17.1	17.3
L	13.6	13.9
M	14.2	14.7
N	17.2	17.5
Average	15.17	15.45

[0055] As can be seen from the results shown in Tables 2 and 3 above, when the swimsuits of the examples were worn, the time was faster than in the case where the swimsuits of the comparative examples were worn, and the movements of the hamstrings, or specifically, the maintenance of the posture in the water were more effectively supported.

[0056] The muscle tension of the joint extensors and the hip joint medial rotators when swimming (when swimming the crawl) while wearing the swimsuit of Example 1 or Comparative Example 1 was evaluated using methods disclosed in Japanese Patent Nos. 5920724 and 3831348. Table 4 below shows the results. The hip joint extensors include the gluteus maximus, the gluteus medius, the gluteus minimus, and the hamstrings, and the hip joint medial rotators include the semitendinosus, the semimembranosus, the gluteus medius (lateral side), the gluteus minimus (lateral side), and the tensor fasciae latae.

[0057]

Table 4

	Hip joint extensors	Hip joint medial rotators
Ex. 1	696	117
Com. Ex. 1	708	121

[0058] As can be seen from the data in Table 4, when the swimsuit of the example was worn, the muscle tension of the hip joint extensors and the hip joint medial rotators during the crawl stroke motion was lower than that when the swimsuit of the comparative example was worn. Thus, it was found that, with the configuration in which two band-like tightening portions were arranged so as to extend in the body length direction from each of the left and right hips to the corresponding thigh such that the tightening portions intersected each other and the intersection of the two or more band-like tightening portions was located between the top of the hip and proximal 1/3 of the hamstrings, the hamstrings were supported, and hence the hip joint extensors and the hip joint medial rotators were supported.

Industrial Applicability

[0059] A swimsuit of the present invention is especially suitable for competition swimsuits.

List of Reference Numerals

[0060] 1, 11, 21, 31, 41, 51, 61, 71, 81, 91: Swimsuit

2, 3, 12, 13, 22, 23, 32, 33, 42, 43, 52, 53, 62, 63, 72, 73, 82, 83, 92, 93: (Posterior lower body above-knee) Tightening portion

4, 14, 24, 34, 44, 54, 64, 74: Intersection of (posterior lower body above-knee) tightening portion

5, 35: (Groin) Tightening portion

6: String

36: Side tightening portion

101, 102, 103, 104: Fabric

200: Degree

300, 400, 500, 600: Piece of fabric

1. A swimsuit for competition swimming that is made of a stretchable fabric and covers at least a portion of the thighs and the hips when worn,

wherein two or more band-like tightening portions are arranged so as to extend in the body length direction from each of the left and right hips to the corresponding thigh such that the tightening portions intersect each other,

an intersection of the two or more band-like tightening portions is located between the top of the hip and proximal 1/3 of the hamstrings and located in a region that covers a portion of the hamstrings,

the intersection of the two or more band-like tightening portions has a tensile modulus of elasticity in the body length direction of 220×10^{-5} N/mm^2 or more and 420×10^{-5} N/mm^2 or less, as measured based on Method A of JIS L 1096 8.14.

2. The swimsuit according to claim 1, wherein the tightening portions are each formed by bonding a piece of tension tape to a stretchable fabric that constitutes a main body of the swimsuit, and then bonding a tape-shaped stretchable fabric having a larger width than the tension tape to the stretchable fabric via the tension tape.

3. The swimsuit according to claim 2, wherein the tension tape and the tape-shaped stretchable fabric are located on the inside of the swimsuit.

4. The swimsuit according to any one of claims 1 to 3, wherein the intersection of the two or more band-like tightening portions is located in a region that covers a portion of the biceps femoris and/or the semitendinosus.

5. The swimsuit according to any one of claims 1 to 4, wherein the stretchable fabric has a tensile modulus of elasticity in the body length direction of 140×10^{-5} N/mm^2 or more and 200×10^{-5} N/mm^2 or less, as measured based on Method A of JIS L 1096 8.14.

6. The swimsuit according to any one of claims 1 to 5, wherein the tightening

portions have a tensile modulus of elasticity in the body length direction of 160×10^{-5} N/mm^2 or more and 220×10^{-5} N/mm^2 or less, as measured based on Method A of JIS L 1096 8.14.

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