A foot covering including a sleeve having a leading end and a trailing end, and the sleeve further having a bottom surface; a band flippably coupled to the sleeve, and having at least one surface of the band with a traction surface, wherein the foot covering has a first structural configuration in which the band and the sleeve are arranged to provide a certain level of traction, and a second configuration in which the band and the sleeve are arranged to provide another level of traction; wherein the band is selectively flappable between the first and second configuration.
TRACTION-CONFIGURABLE FOOT COVERING

TECHNICAL FIELD

[0001] Embodiments relate to activewear, and, more specifically, to foot coverings.

BACKGROUND

[0002] Some fitness activities, such as dance, yoga, and barre classes, are often performed without shoes. In order to perform these exercises and movements properly, some movements require grip to the floor and others require slip. When performing movements barefoot, there is no protection barrier between the skin on the bottom of the foot and the floor, which can result in injuries. For example, when performing movements on the ball of one’s feet, blisters and painful callouses can form as a result of the traction between the athlete’s feet and the floor. Spinning movements can cause uncomfortable friction contact between the skin on the ball of the foot and the hard surface. For some moves, like spinning, an athlete needs to have a low level of traction, or slip, between her foot and the floor, but for other types of moves, like leaping, a higher level of traction, or grip, between the foot and the floor is more important. Particularly, if an athlete slips when leaping, she may risk becoming injured.

[0003] During a single fitness session, an athlete will likely practice or perform an activity with movements requiring both slip and grip. Current solutions make it cumbersome for an athlete to switch the desired traction levels in a foot covering during a fitness routine. In order to switch the desired traction level, athletes today have to put on a foot covering for a certain level of traction, and then remove the foot covering for a different desired level of traction. Athletes can also change between two different foot coverings by taking one completely off, then putting on a different one altogether. This is disruptive to the fitness activity, and may potentially result in pulled or strained muscles if the athlete has to stop the fitness movement and be inactive for a period of time to put on or take off a foot covering to get the desired level of traction.

SUMMARY

[0004] Embodiments provide a system and methods for an athlete to selectively adjust the desired level of traction for a foot covering during a fitness routine.

[0005] In one embodiment, an athlete wears a novel foot covering, the foot covering includes a sleeve having a leading end and a trailing end, and the sleeve further having a bottom surface; a band flipably coupled to the sleeve, and having at least one surface of the band with a traction surface, wherein the foot covering has a first structural configuration in which the band and the sleeve are arranged to provide a certain level of traction, and a second configuration in which the band and the sleeve are arranged to provide another level of traction; wherein the band is selectively flipvable between the first and second configuration.

[0006] In other embodiments, the foot covering has a traction surface made from a material that provides slip, and in some embodiments, the traction surface has at least one silicone grip on the bottom to provide grip.

[0007] In other embodiments, the foot covering has a bottom surface made from a material that provides slip, and in some embodiments, the bottom surface has at least one silicone grip on the bottom to provide grip.

[0008] In other embodiments, the foot covering further includes at least one toe securement that is coupled to the band and to the sleeve, where the at least one toe securement defines toe openings. In some embodiments, the at least one toe securement is an elastic material. In yet other embodiments, the toe securement is part of the sleeve. In some embodiments, the at least one toe securement is coupled between the big toe and the second toe. In other embodiments, the at least one toe securement is coupled between some or all of the other toes. The at least one toe securement is not a separate component but a region of the sleeve and band.

[0009] In other embodiments, the sleeve is continuous around its perimeter. In some embodiments, the sleeve is a sock. In yet other embodiments, the sleeve has a heel opening for the heel. In other embodiments, the sleeve may extend to the ankle, knee, thighs, or any other suitable position. In some embodiments the sleeve may be made of an athletic fabric such as nylon spandex blend, power mesh, compression fabric, or any other suitable materials. In other embodiments, the sleeve may also be a sock that fully covers all of the toes.

[0010] In other embodiments, the band may be made of an athletic fabric such as nylon spandex blend, power mesh, compression fabric, or any other suitable material.

[0011] In other embodiments, the foot covering includes a sleeve having a leading end and a trailing end, wherein the leading end of the sleeve defines an opening configured to receive a foot, the sleeve further having a bottom surface; a band flipably coupled to the sleeve; and a selectively flipable means for changing the amount of traction between the bottom surface and the floor. One way to selectively flip the band is to flip the band over the toes. Other ways to selectively flip the band includes sliding or spinning over the toes, or over the inner or outer side of the foot.

[0012] In other embodiments, the foot covering allows the athlete to facilitate a rapid change of traction level by selectively flipping to the desired level of traction, without requiring the athlete to remove the protective foot covering.

[0013] In other embodiments, the foot covering is integrated aesthetically to an athlete’s apparel, including her leggings.

[0014] In other embodiments, the foot covering includes a sleeve having a foot opening with a leading edge and a trailing edge with a bottom surface; a band coupled to the sleeve and having a traction surface; and a toe securement coupled to the band and the sleeve, wherein the foot covering has two configurations. In a first configuration, the band is in a top-most position above the foot and the traction surface is facing towards the sleeve, exposing the bottom surface to the floor. The bottom surface provides the athlete with slip to minimize the traction between her foot and the floor. In a second configuration, the band is selectively flipped to the bottom-most position below the foot and the traction surface faces away from the sleeve, exposing the traction surface to the floor. The traction surface has at least one silicone grip, providing the athlete with grip by increasing the traction between her foot and the floor. The band is selectively flipvable between the first and the second configuration by moving the band either to the top or bottom of the foot.

[0015] In other embodiments, the foot covering includes a sleeve having a foot opening with a leading edge and a trailing edge with a bottom surface; a band coupled to the sleeve and having a traction surface; and a toe securement coupled to the
band and the sleeve, wherein the foot covering has two configurations. In a first configuration, the band is in a top-most position above the foot and the traction surface is facing towards the sleeve, exposing the bottom surface to the floor. The bottom surface has at least one silicone grip, providing the athlete with grip to minimize the traction between her foot and the floor. In a second configuration, the band is selectively flipped to the bottom-most position below the foot and the traction surface faces away from the sleeve, exposing the traction surface to the floor. The traction surface provides the athlete with grip to minimize the traction between her foot and the floor. The band is selectively flippable between the first and the second configuration by moving the band either to the top or bottom of the foot.

In other embodiments, the band shape is rectangular. In other embodiments, the band shape follows the contours along the bottom of the toes and provides a natural mechanical securement mechanism.

While multiple embodiments are disclosed, still other embodiments of the present invention will become apparent to those skilled in the art from the following detailed description, which shows and describes illustrative embodiments of the invention. Accordingly, the drawings and detailed description are to be regarded as illustrative in nature and not restrictive.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of one embodiment of the foot covering apparatus. FIG. 2A is a top view of the foot covering with the band in a top-most position, in accordance with one embodiment. FIG. 2B is a bottom view of the foot covering shown in FIG. 2A, showing the band in the bottom-most position with the traction surface facing away from the sleeve. FIG. 3A is a close-up view of the top of the foot covering with the band on the top-most part of the foot covering, in accordance with one embodiment. FIG. 3B is a close-up view of the bottom of the foot covering shown in FIG. 3A, with the band on the bottom-most part of the foot covering, in accordance with one embodiment. FIG. 3C is a close-up view of the top of the foot covering shown in FIG. 3A, with the band on the bottom-most part of the foot covering, in accordance with one embodiment. FIG. 4A is a close-up front view of the toe securement with the band on the bottom-most part of the foot covering, in accordance with one embodiment. FIG. 4B is a close-up front view of the toe securement as shown in FIG. 4A, with the band on the top-most part of the foot covering, in accordance with one embodiment. FIG. 5A is a bottom view of the foot covering with the band on the bottom-most part of the foot covering, in accordance with another embodiment. FIG. 5B is a top view of the foot covering shown in FIG. 5A, with the band on the top-most part of the foot. FIG. 5C is a bottom view of the foot covering shown in FIG. 5A, with the band on the top-most part of the foot. FIG. 6A is a constructive back view of the foot covering for a left foot. FIG. 6B is a constructive side view of the foot covering for a left foot. FIG. 6C is a constructive front view of the foot covering for a left foot. Corresponding reference characters indicate corresponding parts throughout the several views.

While the invention is amenable to various modifications and alternative forms, specific embodiments have been shown by way of example in the drawings and are described in detail below. The invention, however, is not to limit the invention to the particular embodiments described. On the contrary, the invention is intended to cover all modifications, equivalents, and alternatives falling within the scope of the invention as defined by the appended claims.

DETAILED DESCRIPTION

Referring to FIG. 1, in some embodiments, the foot covering 100 includes a sleeve 110 that is adapted to cover a foot. The sleeve in FIG. 1 is shown as extended to the knee. In other embodiments, the sleeve 110 may extend to the ankle, thigh, or any other suitable positions. The sleeve 110 may be made of athletic fabrics that are wicking, breathable, stretchable, such as nylon spandex blend, power mesh, compression fabric, or any other suitable materials. The sleeve 110 in some embodiments may be continuous and made of one material. In other embodiments, the sleeve 110 may also be sewn together from more than one different material. The sleeve 110 in FIG. 1 shows a cutoff for a heel opening 170. In some embodiments, the sleeve 110 may be continuous without a heel opening.

The sleeve 110 has a leading edge 120 that defines at least one opening to receive a foot 140. The leading edge 120 defines an opening to receive a foot 140. The trailing edge 130 defines how far up the sleeve extends on the leg. The trailing edge 130 also holds up the foot covering tightly so that the trailing edge 130 stays in place on the leg. In some embodiments, the trailing edge has an elastic band that compresses on the leg to keep the sleeve in place.

The foot covering 100 includes a band 150 that is coupled to the sleeve 110. In FIG. 1, the band is shown in the top-most position of the foot, above the foot 140 and over the sleeve 110, which surrounds the foot 140.

The foot covering 100 also includes a toe securement 160 which is coupled to the band 150 and the sleeve 110. The toe securement 160 in some embodiments defines a plurality of toe openings. In some embodiments, the toe securement 150 is elastic where the elastic is covered by a fabric that does not chafe the skin between the toes.

While this embodiment in FIG. 1 has been described as a sleeve 110, embodiments can be made where the sleeve 110 can be a shoe.

The next set of figures, FIGS. 2A-2B, shows in a certain embodiment, the two different structural configurations of the band 150. FIG. 2A shows the foot covering 100 of FIG. 1 from a top view, and FIG. 2B shows the foot covering 100 of FIG. 1 from a bottom view. The foot covering 100 includes a band 150 that is coupled to the sleeve 110. FIG. 2A shows the foot covering 100 in a first structural configuration, where the band is in the top-most position above the foot and over the sleeve 110, which surrounds the foot 140. The toe connector 160 is coupled to the band and to the sleeve. The band 150 as shown in FIG. 2A is selectively flippable to a second structural configuration as shown in FIG. 2B by selectively flipping the band 150 over the toes as shown in the direction of the arrow 210.
One way to selectively flip the band is by flipping the band over the toes. Other ways to selectively flip the band is by spinning, sliding, or any other suitable way to flip the band over the toes in the direction of the arrow 210, or over either the inner or outer side of the foot 140. The toe securement 160 helps keep the band 150 in place in either the first structural configuration or the second structural configuration.

In some embodiments, when the band is selectively flipped to the bottom-most position, the band 150 fully covers the toes.

In the second structural configuration as shown in FIG. 2B, the band 150 is in the bottom-most position under the foot, covering the bottom surface 250 of the sleeve 110. The band 150 has at least one surface with a traction surface 220 as shown in FIG. 2B. When in the first structural configuration as shown in FIG. 2A, the traction surface 220 faces towards the sleeve while in the second structural configuration as shown in FIG. 2B, the traction surface 220 faces away from the bottom surface 250 of the sleeve 110. In other embodiments, the traction surface 220 can face away from the sleeve 110 in the first structural configuration and towards the sleeve 110 in the second structural configuration.

The traction surface 220 in FIG. 2B further comprises at least one silicone grip 230. The at least one silicone grip 230 can be arranged in a variety of patterns that produce grip to the floor surface. In other configurations, at least one silicone grip 230 can also be any organic or inorganic material that provides increased traction to the floor surface. The pattern of the at least one silicone grip 230 can be any suitable pattern such as a plurality of circular shapes, one continuous shape on the traction surface 220, or a series of longitudinal ribbed pattern. In some embodiments, the series of longitudinal ribbed pattern can provide other functionality such as enhanced wicking and enhanced securement. In one embodiment, the silicone grip 230 can be attached to the traction surface 220 by a heat transfer adhesion process or any other suitable method to adhere the at least one silicone grip 230 to the traction surface 220.

In FIG. 2A, the sleeve 110 is made up of two different materials and sewn together at the sleeve seam 240. In other embodiments, as shown in FIG. 2B, the sleeve 110 is one continuous material.

The next set of figures, FIGS. 3A-3C, shows the foot covering 100 in another embodiment. In FIG. 3A the foot covering 100 is in a first structural configuration where the band 150 is in the top-most position above the foot and over the sleeve 110. In one embodiment, the band 150 includes a logo 360 on the fabric of the band 150. In some embodiments, the logo can be sewn on or screen-printed. In FIG. 3B, the foot covering 100 is shown in a second structural configuration where the band 150 is in the bottom-most position under the foot. FIG. 3C shows the top view of the foot when the foot covering 100 is in a second structural configuration where the band is in the bottom-most position under the foot, as in FIG. 3B.

FIG. 3A shows the toe securement band attachment point 370 in a first structural configuration where the band 150 is in the top-most position above the foot, and FIG. 3B shows the same toe securement band attachment point 370 in a second structural configuration where the band 150 is in the bottom-most position under the foot, exposing its traction surface 220. The toe securement band attachment point 370 is where the toe securement is coupled to the band 150 and the toe securement sleeve attachment point 350 is where the band 150 is coupled to the sleeve 110. The toe securement 160 has a first end that attaches to the band 150 at the toe securement band attachment point 370, and a second end that attaches to the sleeve 110 between the big toe 330 and the second toe 332 at the toe securement sleeve attachment point 350 as seen in FIG. 3C. In some embodiments, the toe securement band attachment point 370 is also where the band 150 is attached to the bottom surface 250 of the sleeve 100.

In some embodiments as shown in FIG. 3C, the sleeve 110 defines a big toe opening 310 to receive the big toe 330, and a remaining toe opening 320 to receive the remaining toes 340, which includes the second toe 332, the middle toe 334, the ring toe 336, and the pinky toe 338. In other embodiments, the sleeve 110 defines a plurality of at least one toe opening to receive a plurality of toes, which includes an embodiment where there is a toe opening for each toe. In other embodiments, the sleeve 110 is a sock that fully covers all the toes.

The traction surface 220 in FIG. 3B comprises at least one silicone grip 230 where in this shown embodiment, the at least one silicone grip 230 is shaped in a continuous design.

The next set of figures, FIGS. 4A-4B, shows the close up of the toe securement 160 and its attachment points. The toe securement 160 can help keep the band 150 in place and is the pivot point that allows the user to selectively flip the band 150 from a first structural configuration to a second structural configuration, or from a second structural configuration back to a first structural configuration. When the band 150 is in a first structural configuration where the band is in the bottom-most position under the foot, as shown in FIG. 4A, the toe securement 160 has a first end that attaches to the band 150 at the toe securement band attachment point 370. In some embodiments, the toe securement band attachment point 370 as shown in FIG. 4A is also where the bottom surface 250 of the sleeve 110 and the band 150 are attached. The toe securement 160 has a second end that attaches to the sleeve 110 between the big toe 330 and the second toe 332 at the toe securement sleeve attachment point 350.

In some embodiments, the sleeve 110 defines one toe opening for all of the toes and the band 150 is attached to the bottom surface 250 only by the toe securement 160. The toe securement 160 has a first end that attaches to the band 150 at the band attachment point 370 and a second end that attaches to the sleeve 110 at the toe securement sleeve attachment point 350, such that the toe securement 160 runs between the big toe 330 and the second toe 332, but the band 150 and the bottom surface 250 are not attached together. In other embodiments, the toe securement 160 is a region between the big toe 330 and the second toe 332, and the band 150 and the bottom surface 250 are attached together at the toe securement 160 area.

FIG. 4B shows the foot covering 100 from FIG. 4A in a second structural configuration where the band is in the top-most position above the foot. The toe securement band attachment point 370 is shown between the first toe 330 and the second toe 332, which is also the same attachment point where the band 150 is attached to the bottom surface 250 of the sleeve 110.

The next set of figures, FIGS. 5A-5C, shows another embodiment of the foot covering 100. FIG. 5A shows an embodiment where the foot covering 100 is in a first structural configuration where the band 150 is in the top-most position above the foot. FIG. 5C shows the toe securement band attachment point 370 in a second structural configuration where the band is in the bottom-most position under the foot.
from the sleeve 110. The traction surface 220 is made of an athletic fabric material such as an athletic fabric such as nylon spandex blend, power mesh, compression fabric, or any other suitable materials that provide less grip between the traction surface 220 and the surface of the floor to allow for slip in the fitness movement.

[0053] In this embodiment, the sleeve 110 has a cut out for a heel opening 170. In other embodiments, the sleeve 110 is continuous. In this embodiment, the toe securement 160 attaches to the band 150 at the toe securement band attachment point 370.

[0054] FIG. 5B shows the foot covering 100 in a second structural configuration from FIG. 5A where the band 150 is in the top-most position above the foot and over the sleeve 110. In this top-most position above the foot, the traction surface 220 faces towards the sleeve 110. In other embodiments, the traction surface 220 can face away from the sleeve. In this embodiment, the sleeve 110 has a heel opening 170.

[0055] FIG. 5C also shows the foot covering 100 in a second structural configuration from FIG. 5B where the band 150 is in the top-most position above the foot and over the sleeve 110. In this embodiment, the bottom surface 250 of the sleeve 110 is shown. In this second structural configuration, the bottom surface 250 provides more grip than the foot covering 100 as shown in the first structural configuration of FIG. 5A. The bottom surface 250 because it further comprises of at least one silicone grip 230. In this embodiment, the at least one silicone grip 230 is in a continuous shape, but in other embodiments, it may comprise a different pattern, such as a series of longitudinal ribbed pattern, or it may have multiple at least one silicone grips 230. In some embodiments, the series of longitudinal ribbed pattern can provide other functionality such as enhanced wicking and enhanced securement. The bottom surface 250 of the sleeve 110 attaches to the band 150 at the toe securement band attachment point 370.

[0056] Finally, FIGS. 6A-6C show how the pieces are assembled together in one embodiment of the foot covering 100. FIG. 6A is the back view of the foot covering 100 for the left leg showing the band 150 in the bottom-most position of a first structural configuration, with the traction surface 250 facing away from the sleeve 110. In this embodiment, the traction surface 220 has at least one silicone grip 230 that provides more grip than when the foot covering 100 is in a second structural configuration. FIG. 6B is the side view of the foot covering 100 shown in FIG. 6A with the band 150 in the first structural configuration as in FIG. 6A, and the traction surface 250 with at least one silicone grip 230 facing away from the sleeve 110. In FIG. 6C, the foot covering 100 is shown in a second structural configuration where the band 150 is in the top-most position, with the traction surface 250 facing towards the sleeve 110. The band 150 is selectively flippable between the first configuration and the second configuration in the direction of the arrow 210. In certain embodiments, the toe securement 160 is connected to the band 150 and the sleeve 110.

[0057] In one embodiment, FIG. 6A shows the sleeve 110 sewn together with a stitch 610 in the back of the leg. In other embodiments the stitch 610 is an aesthetic feature such as a zoot stitch or any other suitable stitching. In other embodiments, it is seamless. The sleeve 110 in this embodiment has a cut-out for a heel opening 170 where the portion under the heel opening 170 is a continuation of the sleeve 110 that defines the bottom surface 250 of the sleeve 110. The band 150 and the sleeve 110 is sewn together along the sides of the foot covering 100 along the band sleeve outer seam 620A and the band sleeve inner seam 620B as shown in FIGS. 6A-6C.

[0058] In one embodiment, the sleeve 110 has a first end that runs towards the trailing edge 130 of the sleeve 110 and a second end that runs to the leading edge 120 of the sleeve 110. There is a sleeve stitch 630 in between the first end and the second end of the sleeve 110. In other embodiments, the sleeve 110 comprises at least two different materials where at least two different materials are joined together at the sleeve stitch 630. The at least two different materials can be the same material in some embodiments.

[0059] Various modifications and additions can be made to the exemplary embodiments discussed without departing from the scope of the present invention. For example, while the embodiments described above refer to particular features, the scope of this invention also includes embodiments having different combinations of features and embodiments that do not include all of the described features. Accordingly, the scope of the present invention is intended to embrace all such alternatives, modifications, and variations as fall within the scope of the claims, together with all equivalents thereof.

What is claimed is:

1. A foot covering, comprising:
   a sleeve having a leading end and a trailing end, wherein the leading end is configured to receive a foot, the sleeve further having a bottom surface; and
   a band flippably coupled to the sleeve, and having at least one surface of the band with a traction surface, wherein the foot covering has a first structural configuration in which the band and the sleeve are arranged to provide a certain level of traction, and
   a second structural configuration in which the band and the sleeve are arranged to provide another level of traction;
   wherein the band is selectively flippable between the first structural configuration and the second structural configuration.

2. The foot covering of claim 1, wherein the leading edge defines at least one toe opening to receive a foot.

3. The foot covering of claim 1, wherein the first structural configuration provides greater grip than the second structural configuration.

4. The foot covering of claim 3, wherein the first structural configuration is configured with the band in a bottom-most position below the foot, having the traction surface facing away from the sleeve; and wherein the second structural configuration is configured with the band in a top-most position above the foot, having the traction surface facing towards the sleeve.

5. The foot covering of claim 4, wherein the traction surface comprises of at least one silicone grip.

6. The foot covering of claim 3, wherein the first structural configuration is configured with the band in a top-most position above the foot, having the traction surface facing the sleeve, and wherein the second structural configuration is configured with the band in a bottom-most position below the foot.

7. The foot covering of claim 6, wherein the bottom surface has at least one silicone grip.

8. The foot covering of claim 1, wherein the second structural configuration provides greater grip than the first structural configuration.
9. The foot covering of claim 8, wherein the first structural configuration is configured with the band in a top-most position above the foot, having the traction surface facing towards the sleeve; and wherein the second structural configuration is configured with the band in a bottom-most position below the foot, having the traction surface facing away from the sleeve.

10. The foot covering of claim 9, wherein the traction surface has at least one silicone grip.

11. The foot covering of claim 8, wherein the first structural configuration is configured with the band in a bottom-most position below the foot, having the traction surface facing away from the sleeve; and wherein the second structural configuration is configured with the band in a top-most position above the foot, having the traction surface facing towards the sleeve.

12. The foot covering of claim 11, wherein the bottom surface has at least one silicone grip.

13. The foot covering of claim 1, wherein the sleeve is continuous around its perimeter.

14. The foot covering of claim 1, further comprising at least one toe securement that defines a plurality of toe openings, wherein the toe securement is coupled to the band and to the sleeve.

15. The foot covering of claim 14, wherein the toe securement is an elastic material.

16. The foot covering of claim 14, wherein the at least one toe securement is a plurality of toe securement that defines a plurality of toe openings.

17. The foot covering of claim 14, wherein the toe securement is the area where the sleeve is coupled to the band.

18. The foot covering of claim 1, wherein the sleeve is a sock.

19. A foot covering, comprising:
   a sleeve having a leading end and a trailing end, wherein the leading end is configured to receive a foot, the sleeve further having a bottom surface;
   a band flippably coupled to the sleeve; and
   a selectively flippable means for arranging the band and the sleeve to provide a different level of traction.

20. A foot covering, comprising:
   a sleeve having a leading end and a trailing end, wherein the leading end of the sleeve defines an opening configured to receive a foot, the sleeve further having a bottom surface; and
   a band flippably coupled to the sleeve and having a traction surface, wherein the foot covering has
   a first configuration in which the band is in a top-most position above the foot with the traction surface facing towards the sleeve; and
   a second configuration in which the band is in a bottom-most position below the foot with the traction surface facing away from the sleeve, the traction surface further comprises at least one silicone grips; wherein the band is selectively flippable between the first and second configuration.

* * * * *