

DESCRIPTION

TITLE: WALKING SOLE FOR A SHOE WITH SKID STABILISATION

TECHNICAL FIELD

5 [0001] The present invention relates to the field of shoes and more particularly relates to a tread sole configured to receive at least one stabilization compensating overshoe, a shoe comprising such a tread sole and such a stabilization compensating overshoe.

BACKGROUND

10 [0002] Gait and balance disorders are common in the elderly and are related to aging of the gait and balance effectors associated with some diseases and their treatments. The combined effect of aging and the onset of various age-related diseases explains the balance and gait disorders commonly encountered in the elderly. Indeed, sarcopenia and the modification of the composition of muscles (adipocytes > myocytes) promoted by aging are detrimental to their function, especially as it is associated with sedentary behavior and undernourishment. Osteoarthritis, osteoporosis, and sedentary behavior affecting the
15 osteoarticular system will also affect balance.

[0003] The impact of these disorders in the elderly is twofold. On the one hand, the loss of independence is directly related to these disorders, a major gait disorder that can partially or completely jeopardize the elderly's independence, whether it is for going out and shopping or for carrying out the gestures of daily life. On the other hand, they are the cause
20 of falls, the severity of which is known in the elderly. These lead to immediate consequences with hospitalization, surgery and secondary consequences with loss of independence, the need to go to a retirement home, etc. The causes of these gait disorders are very varied and means to correct these disorders are usually orthopedic shoes, orthoses, simple poles, poles, tripod poles, walkers, chairs, etc.

25 [0004] However, orthopedic shoes only provide very limited improvement and other solutions, especially orthoses, simple poles, poles, tripod poles, walkers, chairs, etc., limit the elderly's independence.

[0005] In order to improve stability of the wearer of a shoe, several solutions have been designed. For example, document EP 0,811,330 describes a shoe particularly suitable for
30 running which comprises stabilization means. The sole of the shoe comprises an undersole, a midsole softer than the undersole, a heel lifting, an internal surface and an external surface comprising a concavely rounded part extending downwards along one side of the sole of the shoe, said concavely rounded part comprising a portion formed by the midsole extending below an end side zone on the side of the sole so that the rounded part thereof

deforms to flatten easily under the load of a user's body weight during a sideways movement of the sole to provide better lateral stability. Although this type of sole improves foot damping during sporting practice, it does not provide satisfactory improvement in the stability of the ankle or midfoot.

5 **[0006]** Another solution disclosed in document WO2013/095709 describes a shoe having a forefoot part, a center part, and a heel part and comprising a sole having a base layer, a heel pedestal extending from the base layer, a lateral stabilizer pedestal extending from the base layer and positioned at least partially under the cuboid bone and a middle stabilizer pedestal extending from the base layer and at least partially positioned under the navicular
10 bone. When moving on two legs, the weight of a person wearing the shoe is supported on at least the heel pedestal, the lateral stabilizer pedestal, and the middle stabilizer pedestal, thereby transferring the person's weight from the heel pedestal to the lateral stabilizer pedestal and the middle stabilizer pedestal. The heel pedestal, stabilizer pedestal, and middle stabilizer pedestal comprise an outsole and a compressible base layer between the
15 outsole and the wearer's foot. Again, although this type of sole improves heel damping, it does not provide satisfactory improvement in the ankle or midfoot stability due to the heel pedestal.

[0007] In order to remedy these drawbacks, and to provide stability not only when walking but also in a static standing position, the applicant has invented a shoe sole comprising
20 specific stabilization means in French patent FR3069419B1. In this solution, the sole comprises at least one lower sole comprising a convex toe box, a convex top lift, a so-called internal surface extending from the top lift to the toe box of the sole on the medial face and comprising a concave or rectilinear part at the midfoot, and a so-called external surface extending from the top lift to the toe box of the sole on the lateral face and comprising a
25 concave part at the midfoot. Furthermore, said sole comprises at least two, medial and lateral, stabilizing elements extending from the internal surface at the midfoot and having a concave edge, and a second so-called lateral stabilizer element extending from the external surface at the midfoot and having a concave edge on the lower face of the medial stabilizer element and the lateral stabilizer element extending between 0.5 and 1.5 mm below the
30 lower face of the lower sole when the latter is in a straight and unloaded state.

[0008] In one alternative embodiment, the central zone of the sole comprises a recess in which a single-piece U-part can be positioned, comprising a medial stabilizing element and a lateral stabilizing element on its ground contact surface. However, on the one hand, such an U-part affects flexibility of the sole during the course of the step and, on the other hand,

it does not provide adequate stability for each individual, that is taking account of particular deficiencies of each person.

[0009] None of the shoe solutions identified in prior art makes it possible to correct specific postural defects of the wearer of said shoe, this being furthermore conventionally carried
5 out using orthopedic soles for a high cost and significant complexity.

[0010] There is therefore a need for a simple and effective solution to overcome at least some of these drawbacks.

SUMMARY

[0011] To this end, one object of the invention is firstly a shoe tread sole, said tread sole
10 comprising a lower surface and a side surface, said lower surface comprising a heel zone, a tip zone and a middle zone located between said heel zone and said tip zone, said middle zone comprising an inner receiving surface and an outer receiving surface, said inner receiving surface extending in relief under the tread sole along the inner edge of the side surface, said outer receiving surface extending in relief under the tread sole along the outer
15 edge of the side surface, the tread sole being remarkable in that the inner receiving surface is configured to receive and hold an inner stabilization compensating overshoe and in that the outer receiving surface is configured to receive and hold an outer stabilization compensating overshoe.

[0012] The term “tread sole” means the outermost part that provides the shoe with the
20 necessary traction and protection against the floor surfaces with which it is in contact, possibly multilayered (ISO 20345:2021(fr) - Personal protective equipment – Safety shoes).

[0013] The sole according to the invention makes it possible to correct specific postural defects such as pronation or supination using stabilization compensating overshoes attached along the inner and/or outer edge of the tread sole while guaranteeing stability of
25 the shoe wearer. Furthermore, depending on the number and thickness of each overshoe, the sole according to the invention allows correcting postural defects of different severity or importance. The sole according to the invention makes it possible to compensate for the posture of the shoe wearer between the ankle joint and the midfoot, i.e. in vertical alignment with the center of gravity, thus improving stability of the ankle and midfoot.

[0014] Preferably, the tread sole, in particular the receiving surfaces, are made of a semi-rigid plastic material.

[0015] Preferably, the peripheral edge of each receiving surface is angular (i.e. not rounded), preferably at an angle in the order of 90°.

- [0016]** In one embodiment, each receiving surface has an angular sector shape in order to improve support and increase stability.
- [0017]** According to one aspect of the invention, the inner receiving surface comprises at least one attachment portion for attaching an inner stabilization compensating overshoe and the outer receiving surface comprises at least one attachment portion for attaching an outer stabilization compensating overshoe.
- [0018]** The attachment portion may for example extend over the entire periphery of the receiving surface or for example along opposite sides to sufficiently attach the overshoe.
- [0019]** In one embodiment, the attachment portion corresponds to the surface that is to come into contact with the ground and that is configured to receive an adhesive element, for example, of the glue type, self-adhesive element or hook and loop strip.
- [0020]** Alternatively or in addition, the attachment portion comprises one or more grooves configured to receive one or more complementary ribs.
- [0021]** Alternatively or in addition, the attachment portion comprises one or more ribs configured to receive one or more complementary grooves.
- [0022]** The cross-section of the groove(s)-rib(s) connection(s) may, for example, take the form of a dovetail, the rib(s) clipping into the groove(s) by deformation and force-fit, the attachment members of the overshoe being deformable.
- [0023]** Advantageously, the inner receiving surface and the outer receiving surface are identical in shape and dimensions in order to be able to mount a same stabilization compensating overshoe both on the inner receiving surface and on the outer receiving surface indifferently. In other words, a same stabilization compensating overshoe model may be used to compensate for the sole internally or externally, thereby making the shoe easier to use.
- [0024]** Even more advantageously, the inner receiving surface and the outer receiving surface are symmetrical to each other, that is placed symmetrically, with respect to the longitudinal axis of the tread sole in order to further improve stability of the foot.
- [0025]** Preferably, the inner receiving surface and the outer receiving surface each have a convex external edge.
- [0026]** The invention also relates to a shoe comprising a tread sole as set forth hereinabove and an upper attached to said tread sole.
- [0027]** By the term “upper”, it is meant the part or parts of the shoe that cover the toes, the top of the foot, the sides of the foot, and optionally the back of the heel. The upper is

attached, for example, by gluing or sewing or by sewing and gluing to the shoe tread sole (ISO 20345:2021(fr) - Personal protective equipment – Safety shoes).

5 **[0028]** Advantageously, the shoe further comprises an inner stabilization compensating overshoe attached to the inner receiving surface and/or an outer stabilization compensating overshoe attached to the outer receiving surface.

[0029] Preferably, the stabilization compensating overshoe(s) protrude by at least 0.5 mm below the lower surface of the tread sole when the same is in a straight and unloaded state.

10 **[0030]** A same shoe may comprise an inner stabilization compensating overshoe and an outer stabilization compensating overshoe that are identical or different, in particular in terms of shape or dimensions, in particular thickness, in order to compensate for specific postural defects such as, for example, a pronating tendency or supinating tendency of the foot in an appropriate manner or even a short leg, while ensuring stability of the wearer of the shoe. Two shoes of a same pair may have stabilization compensating overshoes with a different thickness to compensate for specific defects peculiar to the wearer of said shoes.

15 **[0031]** In one embodiment, the tread sole of the shoe comprises a first inner lateral stabilizer element, the ground contact zone of which comprises the inner receiving surface, and a second outer lateral stabilizer element, the ground contact zone of which comprises the outer receiving surface, the inner stabilization compensating overshoe being mounted to said inner receiving surface and the outer stabilization compensating overshoe being
20 mounted to said outer receiving surface, the inner stabilization compensating overshoe and the outer stabilization compensating overshoe protruding by at least 0.5 mm below the lower surface of the tread sole when the same is in a straight and unloaded state.

[0032] Even more advantageously, the inner stabilization compensating overshoe is attached to the inner receiving surface through complementary attachment members and/or
25 the outer stabilization compensating overshoe is attached to the outer receiving surface by complementary attachment members.

[0033] In one embodiment, the complementary attachment members are of the clip-on type.

30 **[0034]** In another embodiment, the complementary attachment members are of the fit-in type.

[0035] In another embodiment, the inner stabilization compensating overshoe is attached to the inner receiving surface via an adhesive element and/or the outer stabilization compensating overshoe is mounted to the outer receiving surface via an adhesive element.

[0036] Preferably, the adhesive element is a glue, a self-adhesive material, or a hook and loop strip.

[0037] The invention also relates to a stabilization compensating overshoe for a shoe tread sole, said tread sole comprising a lower surface and a side surface, said lower surface comprising a heel zone, a middle zone and a tip zone, said middle zone comprising at least one receiving surface, the stabilization compensating overshoe comprising a compensation portion, said compensation portion comprising an external surface configured to come into contact with the ground and an internal surface comprising at least one attachment member configured to attach the stabilization compensating overshoe to said at least one receiving surface by fitting-in.

[0038] The stabilization compensating overshoe according to the invention makes it possible to correct specific postural defects such as pronation or supination depending on the place where it is attached under the tread sole while guaranteeing stability of the shoe wearer. Furthermore, depending on its thickness, the stabilization compensating overshoe according to the invention makes it possible to correct postural defects of different severity or importance. The stabilization compensating overshoe according to the invention makes it possible to compensate for the posture of the shoe wearer. By extending from the ankle joint to the midfoot, that is in vertical alignment with the center of gravity, it improves stability of the ankle and midfoot.

[0039] According to one aspect of the invention, the compensation portion comprises an external edge, to be oriented outwardly of the tread sole, and an internal edge, to be oriented inwardly of the tread sole.

[0040] Advantageously, the external edge of the compensation portion has a convex shape for increasing contact surface of the shoe outwardly and thus stability of the shoe and its wearer effectively.

[0041] Preferably, the internal edge of the compensation portion has a concave shape for increasing volume between the receiving surfaces and between the stabilization compensating overshoes in order to better absorb shocks and evacuate the liquid (for example water) or semi-solid (for example sludge) or solid (for example gravel) materials.

[0042] The stabilization compensating overshoe may be an inner stabilization compensating overshoe configured to attach to a receiving surface located on the inner side of the middle zone or an outer stabilization compensating overshoe configured to attach to a receiving surface located on the outer side of the middle zone.

- [0043]** In one embodiment, the compensation portion extends in a plane, parallel to the receiving surface and the ground when the shoe is placed on the ground in the position of use and without mechanical stress applied, or force applied.
- [0044]** For example, the thickness of the compensation portion is between 0.5 and 10 mm to compensate for most foot postural defects depending on the nature of the receiving surface of the shoe.
- [0045]** In one embodiment, the internal surface of the compensation portion is planar.
- [0046]** Alternatively, the internal surface may be configured to conform to reliefs of the receiving surface to allow proper positioning of the stabilization compensating overshoe on said receiving surface.
- [0047]** Preferably, the external surface of the compensation wall comprises a multidirectional anti-slip coating.
- [0048]** In one embodiment, the at least one attachment member comprises at least one rim extending at least partially around the internal surface.
- [0049]** In one embodiment, the compensation portion comprises a single attachment member consisting of a rim.
- [0050]** Preferably, the rim extends over at least three sides of the internal surface.
- [0051]** In one embodiment, the rim extends on all four sides of the internal surface.
- [0052]** In one embodiment, the at least one attachment member comprises at least one stud.
- [0053]** In one embodiment, the stud has a cylindrical shape of circular cross-section.
- [0054]** In another embodiment, the stud has the shape of a tab or rib or flange or any other shape of protrusion adapted to allow connection by fitting-in or interlocking.
- [0055]** In one embodiment, the at least one attachment member comprises two studs.
- [0056]** In one embodiment, the at least one attachment member comprises at least one rim and at least one stud.
- [0057]** In one embodiment, the internal surface of the compensation portion comprises at least one adhesive element.
- [0058]** The at least one adhesive element may be protected by a removable or peelable protective layer, for example made of a plastic material. The protective layer allows the stabilization compensating overshoe to be transported without the risk of it sticking to an

outer object. The protective layer is removed just before mounting the stabilization compensating overshoe to the receiving surface.

[0059] Advantageously, the at least one adhesive element is distributed over the entirety of said internal surface.

- 5 **[0060]** Preferably, the internal surface of the compensation portion comprises a single adhesive element.

[0061] Advantageously, the stabilization compensating overshoe comprises a stabilization portion extending from the external edge of the compensation portion and being configured to fit to the side surface of the tread sole.

- 10 **[0062]** By the term “external edge”, it is meant the edge of the compensation portion which is to be placed on the side of the side surface of the tread sole.

[0063] The stabilization portion comprises an outer surface and an inner surface, said inner surface being configured to come into contact with the side surface of the tread sole.

- 15 **[0064]** Advantageously, the stabilization portion may comprise an adhesive element on its inner surface in order to securely attach the stabilization compensating overshoe to said side surface.

[0065] Alternatively or in addition, the stabilization portion may comprise at least one fit-in element configured to fit to a complementary portion of the side surface of the tread sole.

[0066] Preferably, the external edge of the compensation portion has a convex shape.

- 20 **[0067]** Even more preferably, the compensation portion and the stabilization portion are made as one piece.

[0068] In one embodiment, the stabilization compensating overshoe is monobloc.

- 25 **[0069]** Preferably, when the stabilization compensating overshoe is attached to a receiving surface of the sole, the external surface of the compensation portion protrudes by at least 0.5 mm below the lower surface of the tread sole when the same is in a straight and unloaded state.

DESCRIPTION OF THE DRAWINGS

- 30 **[0070]** Further characteristics and advantages of the invention will further appear upon reading the description that follows. This is purely illustrative and should be read in conjunction with the appended drawings in which:

[0071] [Fig 1] Fig. 1 is a side view of an exemplary shoe comprising two receiving surfaces for two stabilization compensating overshoes according to the invention.

- [0072]** [Fig 2] Fig. 2 schematically illustrates one embodiment of the tread sole according to the invention in a bottom view, said tread sole being that of the shoe of Fig. 1.
- [0073]** [Fig 3] Fig. 3 schematically illustrates one embodiment of the shoe according to the invention in which the visible stabilization compensating overshoe does not comprise a stabilization portion.
- [0074]** [Fig 4] Fig. 4 schematically illustrates one embodiment of the shoe according to the invention in which the visible stabilization compensating overshoe comprises a stabilization portion.
- [0075]** [Fig 5] Fig. 5 illustrates the tread sole of Fig. 2 with an inner stabilization compensating overshoe and an outer stabilization compensating overshoe mounted to the inner receiving surface and the outer receiving surface respectively.
- [0076]** [Fig 6] Fig. 6 schematically illustrates one embodiment of the stabilization compensating overshoe according to the invention with a peripheral rim and without a stabilization portion.
- [0077]** [Fig 7] Fig. 7 schematically illustrates one embodiment of the stabilization compensating overshoe according to the invention with a peripheral rim and a stabilization portion.
- [0078]** [Fig 8] Fig. 8 schematically illustrates one embodiment of the stabilization compensating overshoe according to the invention without a peripheral rim and stabilization portion and comprising two fit-in studs.
- [0079]** [Fig 9] Fig. 9 schematically illustrates one embodiment of the stabilization compensating overshoe according to the invention with a peripheral rim, a stabilization portion, an adhesive element and a protective layer.
- [0080]** [Fig 10] Fig. 10 schematically illustrates the placement of one exemplary stabilization compensating overshoe according to the invention in a side view.
- [0081]** [Fig 11] Fig. 11 schematically illustrates the placement of one exemplary stabilization compensating overshoe on the corresponding receiving surface of the tread sole.
- [0082]** [Fig 12] Fig. 12 schematically illustrates the placement of another exemplary stabilization compensating overshoe on the corresponding receiving surface of the tread sole.

[0083] [Fig 13] Figure 13 illustrates schematically the placement of another exemplary stabilization compensating overshoe on the corresponding receiving surface of the tread sole.

5 **[0084]** [Fig 14] Figure 14 schematically illustrates the shoe of the example of Figure 13 without a stabilization compensating overshoe.

[0085] [Fig 15] Figure 15 shows the shoe schematically of the example of Figure 13, with the stabilization compensating overshoe attached to the sole.

10 **[0086]** [Fig 16] Figure 16 schematically illustrates the mounting of two stabilization compensating overshoes according to the example of Figures 13 to 15 on a corresponding shoe sole.

[0087] [Fig 17] Figure 17 schematically illustrates an example of a hatch with an integrated locking bar for the shoe from the example in Figures 13 to 15.

15 **[0088]** [Fig 18] Figure 18 schematically illustrates the placement of another exemplary stabilization compensating overshoe on the corresponding receiving surface of the tread sole.

[0089] [Fig 19] Figure 19 illustrates another example of stabilization compensating overshoe on the corresponding receiving surface of the tread sole.

DETAILED DESCRIPTION

20 **[0090]** One exemplary shoe 1 according to the invention has been represented in Figs. 1 to 5.

[0091] The shoe 1 comprises a tread sole 10, an upper 20 and two stabilization compensating overshoes 30: an inner stabilization compensating overshoe noted 30-I and an outer stabilization compensating overshoe noted 30-E to differentiate them in Figs. 5 and 10 to 12.

25 **[0092]** Tread sole 10

[0093] With reference to Fig. 1, the tread sole 10 comprises a lower surface 110 and a side surface 120 delimiting said lower surface 110.

[0094] With reference to Figs. 1 and 2, the lower surface 110 comprises a heel zone 110T, a middle zone 110M, and a tip zone 110P.

30 **[0095]** With reference to Fig. 2, the middle zone 110M comprises two receiving surfaces 111: an inner receiving surface noted 111-I and an outer receiving surface noted 111-E to differentiate them in Figs. 2 and 10 to 12.

[0096] The inner receiving surface 111-I extends in relief under the tread sole along the inner edge of the side surface 120, said outer receiving surface 111-E extending in relief under the tread sole along the outer edge of the side surface 120.

[0097] By the term “inner”, it is intended the internal side of the shoe, in the medical sense of the term. By the term “outer”, it is intended the external side of the shoe, also in the medical sense of the term.

[0098] The inner receiving surface 111-I is configured to receive and hold an inner stabilization compensating overshoe 30-I and the outer receiving surface 111-E is configured to receive and hold an outer stabilization compensating overshoe 30-E.

[0099] The receiving surfaces 111 may be at the same level as the other reliefs of the lower surface 110 of the tread sole 10 (as in the examples of Figs. 11 and 12) or extend protruding with respect to the other reliefs of the lower surface 110 of the tread sole 10 (as in the example of Fig. 1), without limiting the scope of the present invention thereto. When the receiving surfaces 111 extend protruding with respect to the other reliefs of the lower surface 110 of the tread sole 10 (as in the example of Fig. 1), the receiving surfaces 111 preferably extend by a height of between 0.5 and 1.5 mm, also without limiting the scope of the present invention thereto.

[0100] Preferably, the inner receiving surface 111-I and the outer receiving surface 111-E are made of a multidirectional anti-slip material or comprise multidirectional anti-slip means.

[0101] Upper 20

[0102] The upper 20 comprises all the elements of the top of the shoe 1 (top part of the shoe 1, above the tread sole 10) such as, for example, a vamp, a tongue, eyelets, laces, etc. Since the upper 20 is known per se and is not the subject of the present invention, it will not be further detailed herein.

[0103] Stabilization compensating overshoe 30

[0104] In the examples illustrated in Figs. 3 to 12 and in a non-limiting manner, each stabilization compensating overshoe 30 is monobloc.

[0105] With reference to Figs. 6 to 9, each stabilization compensating overshoe 30 comprises a compensating portion 310 comprising an external edge 310A, to be oriented outwardly of the tread sole 10, and an internal edge 310B, to be oriented inwardly of the tread sole 10.

- [0106]** In the advantageous embodiments illustrated in Figs. 6 to 9, the external edge 310A of the compensation portion 310 has a convex shape for increasing bearing surface area of the shoe 1 outwardly and thus stability and wearer of the shoe 1 effectively.
- [0107]** Preferably, as illustrated in the examples of Figs. 9 to 12, the internal edge 310B of the compensation portion 310 has a concave shape for increasing volume between the receiving surfaces 111 and between the stabilization compensating overshoes 30 in order to better absorb shocks and evacuate the liquid (for example water) or semi-solid (for example sludge) or solid (for example gravel) materials.
- [0108]** The compensation portion 310 comprises an external surface 311, visible in Figs. 11 and 12, configured to come into contact with the ground, and an internal surface 312, visible in Figs. 6 to 9, comprising at least one attachment member configured to attach the stabilization compensating overshoe 30 to the corresponding receiving surface 111 of the tread sole 10 by fitting-in.
- [0109]** Preferably, the external surface 311 is a multidirectional anti-slip surface, for example by being made of an anti-slip material and/or having reliefs in all directions.
- [0110]** In a first embodiment illustrated in Fig. 6, the internal surface 312 is planar and the attachment member comprises a single rim 313 extending over the entire periphery of the internal surface 312, that is over the four edges of the internal surface 312 of the compensation portion 310.
- [0111]** In another embodiment, illustrated in Fig. 8, the internal surface 312 comprises two studs 314, for example made as one piece with said internal surface 312, each configured to be inserted into a complementary port of the receiving surface 111.
- [0112]** It goes without saying that different types of attachment members may be combined on the stabilization compensating overshoe 30, for example at least one rim 312 and at least one stud 314 or any other type of suitable attachment member. For example, in the example of Fig. 12, the stabilization compensating overshoe 30 comprises a bead 324 and two studs 314.
- [0113]** In one embodiment illustrated in Figs. 7 and 9–12, the stabilization compensating overshoe 30 comprises a stabilization portion 320 extending from the external edge of the compensation portion 310 in a direction substantially orthogonal to the plane of said compensation portion 310.
- [0114]** Preferably, and in the embodiments illustrated in Figs. 6 to 12, the stabilization compensating overshoe 30 is monobloc and the compensation portion 310 and the stabilization portion 320 are made as one piece.

- [0115]** The stabilization portion 320 is configured to fit to the side surface 120 of the tread sole 10 in order to bear against said side surface 120, thereby fulfilling a lateral reinforcement function and increasing bearing surface area of the tread sole 10 and thus stability and wearer of the shoe 1.
- 5 **[0116]** In this example, the stabilization portion 320 is in the form of a rim 322 with a larger height than the rim 313 of the compensation portion 310 (Fig. 9) or in the form of a bead 324 (Figs. 7, 11 and 12) whose cross-section has an outwardly convex shape and an inwardly concave shape (i.e. to the compensation portion 310) complementary to the convex shape of the corresponding portion of the side surface 120.
- 10 **[0117]** It should be noted that the illustrated examples of stabilization compensating overshoe 30 comprising a stabilization portion 320, said stabilization portion 320 participates in the attachment members given that the receiving surface 111 would be blocked by fitting-in both by the rim 313 and by the stabilization portion 320.
- [0118]** Alternatively or in addition, the attachment members may be attachment members
15 between the overshoe 30 and the receiving surface 111. These members may be clipped-on or fitted-in. For example, the receiving surface 111 may comprise one or more grooves on all or part of its periphery and the overshoe 30 may comprise one or more complementary ribs configured to be positioned in the groove(s) in order to clip the overshoe 30 onto the receiving surface 111. Alternatively or in addition, the receiving surface 111
20 may comprise one or more ribs on all or part of its periphery and the overshoe 30 may comprise one or more complementary grooves configured to be positioned in the groove(s) in order to clip the overshoe 30 onto the receiving surface 111.
- [0119]** Figures 13 to 15 represent another embodiment of stabilization compensating overshoe 30. In this form of construction, the stabilization compensating overshoe 30 is
25 clipped onto the tread sole 10.
- [0120]** The internal stabilization compensating overshoe 30-I and the external stabilization compensating overshoe 30-E each clip from one side of the tread sole 10 into an elongated cavity 122, shaped like an aircraft wing section, which has a rectangular hole 124.
- [0121]** The internal stabilization compensating overshoe 30-I and the external stabilization
30 compensating overshoe 30-E each have a trim portion 310, a stabilizing portion 320, and an arrow-shaped clip-on attachment member 330 extending orthogonally projecting inward from the stabilizing portion 320. The attachment member 330 consists of a left part 331 in the shape of a half-arrow and a right part 332 also in the shape of a half-arrow. The left part 331 and the right part 332 are connected at the level of their base but delimit a slot 333

leading to the level of the arrowhead. An evident of semicircular material 334 is also formed on each of the left part 331 and the right part 332 at the level of the tip of the arrow.

5 **[0122]** In order to clip the internal stabilization compensating overshoe 30-I and the external stabilization compensating overshoe 30-E, the tread sole 10 has a rectangular housing 126 formed at the middle area 110M and into which the two rectangular ports 124 open.

10 **[0123]** Regardless of the embodiment of the stabilization compensating overshoe 30, with reference to the example of Fig. 9, the internal surface 312 may comprise an adhesive element 316 distributed on said internal surface 312 for proper adhesion of the stabilization compensating overshoe 30 to the receiving surface 111.

[0124] The adhesive element 316 may be a self-adhesive material or a portion of hook and loop material or any other suitable adhesive material. The self-adhesive material may be detachable and reusable or durable (strong glue) depending on the intended use time.

15 **[0125]** In the case of a self-adhesive material, the adhesive element 316 may be protected by a removable or peelable protective layer 317, for example made of a plastic material. The protective layer 317 makes it possible to transport the stabilization compensating overshoe 30 without risking it sticking to an outer object. The protective layer 317 is removed just before mounting the stabilization compensating overshoe 30 to the receiving surface 111.

20 **[0126]** Preferably, in order to correct most postural defects, the at least one stabilization compensating overshoe 30 is configured to protrude by at least 0.5 mm below the lower surface 110 of the tread sole 10 when the same is in a straight and unloaded state. This allows main bearing at the central zone of the shoe 1 to thereby enhance overall stability of the wearer of said shoe 1.

25 **[0127]** In an embodiment shown in Figure 18, the stabilization compensating overshoe 30 has one or more holes 350 (two holes 350 in the example in Figure 18) and is attached to the lower surface 110 of the tread sole 10 by through screws 360. The screws 360 allow the height of the stabilization compensating overshoe 30 to be adjusted according to whether they are more or less screwed together, creating a gap between the stabilization
30 compensating overshoe 30 and the lower surface 110 of the tread sole 10.

[0128] In another embodiment shown in Figure 19, similar to that shown in Figure 18, the stabilization compensating overshoe 30 has one or more holes 350 (only one of which is visible in Figure 19) and is attached to the lower surface 110 of the tread sole 10 by one or more through screws 360 (only one of which is visible in Figure 19). The screw head 360 is

taken in a slot 100A of the tread sole 10 while being free to rotate. The screw 360 is screwed into an additional thread in hole 350 of the stabilization compensating overshoe 30 in order to move the stabilization compensating overshoe 30 away from the lower surface 110 of the tread sole 10, creating a gap 101 between the stabilization compensating overshoe 30 and the lower surface 110 of the tread sole 10 when the stabilization compensating overshoe 30 is moved away from the bottom surface 110 by screw 360.

[0129] Example of use

[0130] The inner stabilization compensating overshoe 30-I and the outer stabilization compensating overshoe 30-E are chosen according to the compensation of the postural defect(s) to be corrected. For example, the inner stabilization compensating overshoe 30-I may be thicker than the outer stabilization compensating overshoe 30-E in order to correct pronation or, conversely, the inner stabilization compensating overshoe 30-I may be thinner than the outer stabilization compensating overshoe 30-E in order to correct supination. The thickness of the inner stabilization compensating overshoe 30-I is chosen according to the correction to be made on the posture: the greater the defect, the greater the thickness of one of the stabilization compensating overshoes 10.

[0131] In the presence of a protective layer 317, said protective layer 317 is first removed (as illustrated in Fig. 9).

[0132] Then, as illustrated in Figs. 10 to 12, the inner stabilization compensating overshoe 30-I is mounted by fitting the attachment members (rim 312 and stabilization portion of the compensation portion on the inner receiving surface 111-I.

[0133] The outer stabilization compensating overshoe 30-E is mounted by fitting the attachment members of the compensation portion on the outer receiving surface 111-E.

[0134] In the example of Figure 16, which depicts the use of the stabilization compensating overshoe 30 in Figures 13 to 15, only the attachment member 330 of the internal stabilization compensating overshoe 30-I and the attachment member 330 of the external stabilization compensating overshoe 30-E are visible for clarity. In other words, compensation portion 310 and stabilization portion 320 were not represented.

[0135] Also with reference to Figure 16, in a "01" step, the attachment member 330 of the internal stabilization compensating overshoe 30-I and the external stabilization compensating overshoe 30-E are approached to the rectangular ports 124 of each cavity 122. In a "02" step, the left portion 331 and the right portion 332 of each attachment member 330 are compressed at the slot 333 so that the arrow tip of each attachment member 330 is narrow enough to pass through the rectangular hole 124 of each cavity 122 (step "03")

before being released to allow each attachment member 330 to be clipped into the housing 126. Then, in a step "04", a locking bar 400, the cross-section of which is H-shaped and comprising two half-cylinders 410 connected head to toe by a wall 420, is placed in the arrowheads of the attachment members 330 so that the two half-cylinders slide into the
5 obviously material 334 to prevent the left part 331 and the right part 332 of each attachment member 330 from being disengaged, thus holding the attachment members 330 clipped and locked in the compartment 126 (step "05"). A trap door 500 forming part of the tread is then folded down to close the housing 126 in a step "06".

[0136] Figure 17 shows a hatch 500 with an integrated locking bar 400, for example, made
10 of the same material, with the "04", "05" and "06" steps being combined.

[0137] The invention therefore makes it possible to correct one or more postural defects of the shoe wearer in a simple, quick and efficient manner by adding one or more stabilization compensating overshoes 30 having a specific thickness to said postural defect(s). In particular, the compensation portion makes it possible to compensate for a
15 postural defect while imparting stability to the ankle and midfoot depending on its thickness while the stabilization portion makes it possible to increase stability, especially lateral stability, of the ankle and midfoot of the wearer and the strength of attachment of the stabilization compensating overshoe 30 to the tread sole 10.

Claims

1. A tread sole (10) for a shoe (1), said tread sole (10) comprising a lower surface (110) and a side surface (120), said lower surface (110) comprising a heel zone (110T), a tip zone (110P) and a middle zone (110M) located between said heel zone (110T) and said tip zone (110P), said middle zone (110M) comprising an inner receiving surface (111-I) and an outer receiving surface (111-E), said inner receiving surface (111-I) extending in relief under the tread sole (10) along the inner edge of the side surface (120), said outer receiving surface (111-E) extending in relief under the tread sole (10) along the outer edge of the side surface (120), the tread sole (10) being characterized in that the inner receiving surface (111-I) is configured to receive and hold an inner stabilization compensating overshoe (30-I) and in that the outer receiving surface (111-E) is configured to receive and hold an outer stabilization compensating overshoe (30-E).
2. The tread sole (10) according to claim 1, wherein the inner receiving surface (111-I) comprises at least one attachment portion for attaching an inner stabilization compensating overshoe (30-I) and the outer receiving surface (111-E) comprises at least one attachment portion for attaching an outer stabilization compensating overshoe (30-E).
3. The tread sole (10) according to the preceding claim, wherein the attachment portion corresponds to the surface which is intended to come into contact with the ground and which is configured to receive an adhesive element.
4. The tread sole (10) according to any of the preceding claims, wherein the attachment portion comprises at least one groove configured to receive at least one complementary rib.
5. The tread sole (10) according to any of the preceding claims, wherein the attachment portion comprises at least one rib configured to receive at least one complementary groove.
6. The tread sole (10) according to any of the preceding claims, wherein the inner receiving surface (111-I) and the outer receiving surface (111-E) are identical in shape and dimensions, preferably symmetrical with respect to the longitudinal axis of the tread sole.
7. The tread sole (10) according to any of the preceding claims, wherein the inner receiving surface (111-I) and the outer receiving surface (111-E) each have a convex external edge.

8. A shoe (1) comprising a tread sole (10) according to any of the preceding claims and an upper (20) attached to said tread sole (10).
9. The shoe (1) according to the preceding claim, further comprising an inner stabilization compensating overshoe (30-I) attached to the inner receiving surface (111-I) and/or an outer stabilization compensating overshoe (30-E) attached to the outer receiving surface (111-E), said inner stabilization compensating overshoe (30-I) and said outer stabilization compensating overshoe (30-E) being identical or different.
10. The shoe (1) according to the preceding claim, wherein the inner stabilization compensating overshoe (30-I) is attached to the inner receiving surface (111-I) by complementary attachment members and/or the outer stabilization compensating overshoe (30-E) is attached to the outer receiving surface (111-E) by complementary attachment members.
11. The shoe (1) according to the preceding claim, wherein the complementary attachment members are of the clip-on type.
12. The shoe (1) according to claim 10, wherein the complementary attachment members are of the fit-in type.
13. The shoe (1) according to any of claims 9 to 12, wherein the inner stabilization compensating overshoe (30-I) is attached to the inner receiving surface (111-I) via an adhesive element and/or the outer stabilization compensating overshoe (30-E) is mounted to the outer receiving surface (111-E) via an adhesive element.
14. The shoe (1) according to the preceding claim, wherein the adhesive element is a glue, a self-adhesive material or a hook and loop strip.
15. A stabilization compensating overshoe (30) for a tread sole (10) of a shoe (1), said tread sole (10) comprising a lower surface (110) and a side surface (120), said lower surface (110) comprising a heel zone (110T), a middle zone (110M) and a tip zone (110P), said middle zone (110M) comprising at least one receiving surface (111), said stabilization compensating overshoe (30) comprising a compensation portion (310), said compensation portion (310) comprising an external surface (311) configured to come into contact with the ground and an internal surface (312) comprising at least one attachment member (313, 314) configured to attach the stabilization compensating overshoe (30) to said at least one receiving surface (111) by fitting-in.