WALKING DEVICE FOR IMPROVING PATIENT WITH KNEE OSTEOARTHRITIS

Applicants: SAI-WEI YANG, TAIPEI (TW);
KEH-TAO LIU, Taipei (TW)

Inventors: SAI-WEI YANG, TAIPEI (TW);
KEH-TAO LIU, Taipei (TW)

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ABSTRACT

A device for improving walks of a patient with knee osteoarthritis includes an insole, an inside-forefoot wedge cushion joining the insole at an inner side of a forefoot, wherein the inside-forefoot wedge cushion can support the inner side of the forefoot and thus reduce knee varus torques, an outside-hindfoot wedge cushion joining the insole at an outer side of a hindfoot, wherein the outside-hindfoot wedge cushion can support the outer side of the hindfoot and thus reduce knee varus torques, and a medial-foot-arch cushion joining the insole, wherein the medial-foot-arch cushion can have a foot to be turned out and increase walking stability and fluency. Thereby, a patient with knee osteoarthritis, when being walking, can have reduced knee varus torques. The purpose of improving walks of a patient with knee osteoarthritis can be achieved.
WALKING DEVICE FOR IMPROVING PATIENT WITH KNEE OSTEOARTHRITIS

BACKGROUND OF THE DISCLOSURE

[0001] a) Field of the Disclosure

[0002] The invention relates to a device for improving walks of a patient with knee osteoarthritis, and more particularly, to a device for improving walks of a patient with knee osteoarthritis, wherein the device can reduce knee varus torques.

[0003] b) Brief Description of the Related Art

[0004] Knee osteoarthritis is a common musculoskeletal disorder. A patient having a worn cartilage in patient’s joint will cause abnormal proliferation of its surrounding bones and cause a joint cavity to become narrow. This would lead patient’s joint when being in motion to have pain and lead the patient’s independence to be reduced. According to the biomechanics, when walking, a patient with knee osteoarthritis has relative great knee varus torque. This would lead knee arthritis to be dramatically deteriorated. Therefore, knee varus deformity would happen to a severe one.

[0005] According to the statics of population over the age of 50 in Taiwan, 16.3% of people, 1.05 million of population, have knee osteoarthritis. In case, according to the statics of population over the age of 60 in Taiwan, 22.9% of people have knee osteoarthritis.

[0006] A traditional insole for improving knee osteoarthritics are typically designed as a pad having a wedge shape at an outer side for a hindfoot or for a full foot and having no cushion at a medial part of a foot for a foot arch. Even though reducing loading of a knee joint during a heel contacting period, this design could result in excessive pronation movement of a foot during a long-standing period or forward-moving period. This leads a foot forward direction to be inward offset, wherein the inward offset causes so-called pigeon-toe gait. Accordingly, a redesign is necessary towards such a disadvantage. The present invention has a difficulty of how the disadvantage can be removed. The inventors had long experience in this field and straight did researches and tests, and finally the invention is developed to significantly improve disadvantages of the conventional insole for improving knee osteoarthritis.

SUMMARY OF THE DISCLOSURE

[0007] According to the above disadvantages, the invention provides a device for improving walks of a patient with knee osteoarthritis. The device includes an insole, an inside-forefoot wedge cushion joining the insole at an inner side of a forefoot, wherein the inside-forefoot wedge cushion is configured to support the inner side of the forefoot and thus reduce knee varus torques, an outside-hindfoot wedge cushion joining the insole at an outer side of a hindfoot, wherein the outside-hindfoot wedge cushion is configured to support the outer side of the hindfoot and thus reduce knee varus torques, and a medial-foot-arch cushion joining the insole, wherein the medial-foot-arch cushion is configured to have a foot to be turned out and increase walking stability and fluency. Thereby, in accordance with the present invention, a patient with knee osteoarthritis, when being walking, can have reduced knee varus torques. Accordingly, the purpose of improving walks of a patient with knee osteoarthritis can be achieved.

[0008] In an embodiment, the insole is a hard form.

[0009] In an embodiment, the inside-forefoot wedge cushion has an inclining angle ranging from 5 degrees to 10 degrees based on user’s needs.

[0010] In an embodiment, the outside-hindfoot wedge cushion has an inclining angle ranging from 5 degrees to 10 degrees based on user’s needs.

[0011] In accordance with the present invention, the inside-forefoot wedge cushion can support the inner side of the forefoot of the patient and thus reduce excessive pronation movement of the forefoot. A toe-out angle can be increased and knee varus torques can be reduced during a forward-moving period. The outside-hindfoot wedge cushion can lead a calcaneus to be turned out. According to a principle of a lower-limb crossed kinetic chain, a knee arrangement can be led to be modified from a heel contacting period to a long standing period, and thus knee varus torques can be effectively reduced. Besides increasing walking stability and fluency, the medial-foot-arch cushion can improve joints of lower limbs and back pain. Furthermore, the medial-foot-arch cushion can have a foot to be turned out and thus knee varus torques can be effectively reduced. According to a principle of a biomechanics crossed kinetic chain, an insole is designed with a wedge shape that can change a direction of transferring a reaction force from the ground during a walking period, and thereby, the loading of a knee can be improved during the walking period. Also, the deterioration of knee arthritis can be palliated.

[0012] The present invention has a purpose to provide a device for improving walks of a patient with knee osteoarthritics and for effectively reducing knee varus torques.

[0013] The present invention has another purpose to provide a device for improving walks of a patient with knee osteoartihritics, wherein the device has a simple structure and a low cost.

[0014] The present invention has another purpose to provide a device for improving walks of a patient with knee osteoartihritics, wherein the device is easy to be utilized.

[0015] The accompanying drawings are included to provide a further understanding of the invention, and are incorporated as a part of this specification. The drawings illustrate embodiments of the invention and, together with the description, serve to explain the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] The drawings disclose illustrative embodiments of the present disclosure. They do not set forth all embodiments. Other embodiments may be used in addition or instead. Details that may be apparent or unnecessary may be omitted to save space or for more effective illustration. Conversely, some embodiments may be practiced without all of the details that are disclosed. When the same numeral appears in different drawings, it refers to the same or like components or steps.

[0017] Aspects of the disclosure may be more fully understood from the following description when read together with the accompanying drawings, which are to be regarded as illustrative in nature, and not as limiting. The drawings are not necessarily to scale, emphasis instead being placed on the principles of the disclosure.

[0018] FIG. 1 is a schematic view of a structure in accordance with the present invention.

[0019] FIG. 2 is a schematically front view in accordance with the present invention.

[0020] FIG. 3 is a schematically back view in accordance with the present invention.
While certain embodiments are depicted in the drawings, one skilled in the art will appreciate that the embodiments depicted are illustrative and that variations of those shown, as well as other embodiments described herein, may be envisioned and practiced within the scope of the present disclosure.

DETAILED DESCRIPTION OF THE INVENTION

Illustrative embodiments are now described. Other embodiments may be used in addition or instead. Details that may be apparent or unnecessary may be omitted to save space or for a more effective presentation. Conversely, some embodiments may be practiced without all of the details that are disclosed.

FIG. 1 is a schematic view of a structure in accordance with the present invention. Referring to FIG. 1, the invention provides a device for improving walks of a patient with knee osteoarthritis. The device includes an insole 1, which can be a hard form, an inside-forefoot wedge cushion 2 joining the insole 1 at an inner side of a forefoot using an adhesive or other methods, wherein the inside-forefoot wedge cushion 2 can support the inner side of the forefoot; and thus reduce knee varus torques, an outside-hindfoot wedge cushion 3 joining the insole 1 at an outer side of a hindfoot using an adhesive or other methods, wherein the outside-hindfoot wedge cushion 3 can support the outer side of the hindfoot and thus reduce knee varus torques, and a medial-foot-arch cushion 4 joining the insole 1 at a foot arch using an adhesive or other methods; wherein the medial-foot-arch cushion 4 can have a foot to be turned out and increase walking stability and fluency.

FIG. 2 is a schematically front view in accordance with the present invention. Referring to FIG. 2, the inside-forefoot wedge cushion 2 joining the insole 1 has an inclining angle ranging from 5 degrees to 10 degrees based on user’s needs and leads user’s feet, when wearing the device, to be corrected for providing comfortable wearing effects.

FIG. 3 is a schematically back view in accordance with the present invention. Referring to FIG. 3, the outside-hindfoot wedge cushion 3 joining the insole 1 has an inclining angle ranging from 5 degrees to 10 degrees based on user’s needs and leads user’s feet, when wearing the device, to be corrected for providing comfortable wearing effects.

So far, few correcting insoles are designed towards knee osteoarthritis. In accordance with the present invention, based on an idea that an ounce of prevention is worth a pound of cure, semi-customization can solve the disadvantages of traditional customization, which is time and cost consuming and health-care appliances with good qualities can be provided for nationals. The invention provides a device for improving walks of a patient with knee osteoarthritis and palliating the deterioration of knee arthritis.

Unless otherwise stated, all measurements, values, ratings, positions, magnitudes, sizes, and other specifications that are set forth in this specification, including in the claims that follow, are approximate, not exact. They are intended to have a reasonable range that is consistent with the functions to which they relate and with what is customary in the art to which they pertain. Furthermore, unless stated otherwise, the numerical ranges provided are intended to be inclusive of the stated lower and upper values. Moreover, unless stated otherwise, all material selections and numerical values are representative of preferred embodiments and other ranges and/or materials may be used.

The scope of protection is limited solely by the claims, and such scope is intended and should be interpreted to be as broad as is consistent with the ordinary meaning of the language that is used in the claims when interpreted in light of this specification and the prosecution history that follows, and to encompass all structural and functional equivalents thereof.

What is claimed is:

1. A device for improving walks of a patient with knee osteoarthritis, comprising:
   an insole;
   an inside-forefoot wedge cushion joining the insole at an inner side of a forefoot, wherein the inside-forefoot wedge cushion is configured to support the inner side of the forefoot and thus reduce knee varus torques;
   an outside-hindfoot wedge cushion joining the insole at an outer side of a hindfoot, wherein the outside-hindfoot wedge cushion is configured to support the outer side of the hindfoot and thus reduce knee varus torques; and
   a medial-foot-arch cushion joining the insole, wherein the medial-foot-arch cushion is configured to have a foot to be turned out and increase walking stability and fluency.

2. The device of claim 1, wherein the insole is a hard form.

3. The device of claim 1, wherein the inside-forefoot wedge cushion has an inclining angle ranging from 5 degrees to 10 degrees based on user’s needs.

4. The device of claim 1, wherein the outside-hindfoot wedge cushion has an inclining angle ranging from 5 degrees to 10 degrees based on user’s needs.

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