A SITTING DEVICE FOR PREVENTION OF SPINAL DISEASES

FIELD OF THE INVENTION

The present invention relates to a sitting device used for sitting on flat surfaces and that device is able to prevent spinal diseases, such as cervical, thoracic, and lumbar diseases, to occur.

BACKGROUND OF THE INVENTION

Wrong sitting postures lead to many spinal diseases. Sitting in a correct posture ~~(see FIG. 8a)~~ means keeping the pelvis in its neutral position, like in the same position when a person is standing~~, i.e. both right and left pelvis are upright, symmetrically arranged in two sides of the sacrum in a position higher than that of the two seating areas and located at the center~~. When the pelvis is in a neutral position, they allow the spine to ~~not tilt to the right or the left and~~ remain in its natural curve ~~as the S-letter~~, meaning the whole body weight is distributed and balanced evenly over the vertebrates and discs of the spine. As a result, spinal diseases are less likely to happen. However, when sitting on flat surfaces, such as a floor, it is very hard to always sit in a posture ~~that keeps the pelvis in such a neutral position, because the feet and two buttocks are in the same plane, the sacrum will be lowered due to the pelvis's sliding forward, the spine shall be bent, changing its posture from the S-letter to the C-letter, the vertebrae shall be pressed in the front parts and opened in the rear,~~ causing back pain due to excessive pressure~~, pinching the disc, leading to its protrusion backwards to press on the nerves or the spinal cord and the pelvis, sacrum, coccyx is deflected and distorted, losing their balances that result in a change of the pelvic shape such as distortion, humpback and loss of curvature~~. Over time, sitting in wrong postures leads to many spinal diseases such as cervical, thoracic, and lumbar diseases. As a result, the person experiences back, neck and joint pain, tension-headaches, fatique and stress related conditions, and many other health problems ~~such as disc herniation, spondylolisthesis. Examples of wrong sitting postures have been shown in FIGs. 8b and 8c, wherein FIG. 8b illustrates the severe exhaustion sitting posture and FIG. 8c shows the degenerative exhaustion sitting posture~~.

In fact, many people have to sit on flat surfaces, such as on the floor, for the long time due to different reasons, for example, to do their work, to meditate, or to attend religious sessions. Without any supporting device ~~to keep the pelvis in a straight posture while sitting underground~~, they soon experience back pain and commonly encounter one or some of the spinal diseases mentioned above.

Many devices have been invented to provide support when sitting on flat surfaces. However, they do not provide stable support that keeps the pelvis always in its neutral position, i.e., the key to sitting in a correct posture. Zafus is one of those. Stuffed with fluffy, soft, downy materials, a zafu ~~or seat cushion~~ raises the hips and partially absorbs the reaction force generated by the floor under the gravity force of the body of a sitter, making sitting in a leg-folding posture or the crossed-legged posture, a.k.a. Lotus sitting posture, more comfortable. However, due to the use of the fluffy materials, a zafu does not provide a stable support; the sitter's pelvis~~, coccyx~~ can tilt in various directions depending on the sitting posture, eventually causing back pain and other spinal problems. US. Pat. No. 6,141,807 discloses an adjustable height pillow that can "encourage proper sitting positions." However, the pillow is stuffed with a soft flexible material ~~in order to primarily form a shape to hold the whole croup~~, therefore cannot provide a stable support to keep the pelvis always in its neutral position. US. Pat. No. 5,652,983 presents a sit/sleep constructed pillow that can provide comfort when sitting on it. However, it also does not provide stable support that can keep the pelvis in its neutral position.

SUMMARY OF THE INVENTION

It shows that there is a need to invent a device used for sitting on flat surfaces. That sitting device must provide stable support~~, having a terraced shape corresponding to hierarchical structure of the sacrum, coccyx, the seating tuberosity and rigidity, not changing its subsidence or tilting under the impact of body weight,~~ that keeps a sitter's pelvis always in its neutral position, allowing the sitter to stay in a sitting posture ~~with the pelvis being upright and symmetric, thereby preventing the spine from being tilted, distorted, or humpbacked~~. The sitting device, therefore, is able to prevent many spinal diseases related to wrong sitting postures including cervical,

thoracic, and lumbar diseases. It is an object of the present invention to provide such a sitting device for the protection of the spine ~~and sacrum~~.

According to the invention, the sitting device for prevention of spinal diseases comprises a padded member, a thin pad extended forwardly from the padded member, and a hard block fully inserted inside the padded member;

when looked from the left or the right side, the padded member has a generally ~~hexagonal~~ right triangular shape, and is made of resilient materials such as foam, rubber, or cotton to make the device comfortable to sit on; the area of the hypotenuse surface of the padded member together with the area of the thin pad is wider than the total area of a sitter's buttocks, upper legs, and knees so that the sitter can sit, in a leg-folding posture, fully on the sitting device without any part of his body touching the flat surface ~~of the floor outside~~;

the hard block is ~~disposed~~ fully inserted inside a soft padded member, made of a non-resilient material such as wood, polystyrene foam, or hard rubber; the hard block is able to tolerate, without ~~deformation~~rupturing, the gravity force on a mass of an adult's body and this hard block is computed so that its height can fill-in the distance from the lowest point of the sacrum to the lowest point of the sitting tuberosity, the height of the front side of the hard block is greater than the distance from the lowest point of the sitter's coccyx to the lowest point of his tuberosity of the ischium ~~sacrum, therefore this hard block can tightly keep the pelvis, sacrum in a upright and symmetric posture~~, and the hard block of this height has a terraced shape in the top to bottom according to anatomical proportion, to ensure supporting each part, of the sacrum, coccyx, ischium ~~seating tuberosities, in order to keep the pelvis and sacrum being upright, symmetric,~~ there by preventing the cervical, thoracic, lumbar spine from being spinal diseases.

To use the sitting device properly, a sitter needs to sit in a leg-folding sitting posture; in which, his buttocks are on top of the highest portion of the padded member, his upper legs lie along the hypotenuse surface of the padded member, and both of his left and right lower legs must rest inside the thin pad and fold along the long side of the thin pad and the right one is on top of the left one. Instead, the sitter can also sits in a cross-legged sitting posture a.k.a. Lotus sitting posture. Importantly, the sitter needs to

adjust his buttocks so that his sacrum and coccyx are elevated by the top part of the hard block, and his ischium stays close to the front side of the hard block. That way, his pelvis is always "locked" in its neutral position, making the sitter sit ~~always in a very upright posture from the neck to the lumbar, thereby his head, neck, and lumbar are aligned just in a straight axis starting from the head to the center of the spine and the center of the sacrum~~in a correct position, thereby preventing spinal diseases related to wrong sitting postures including cervical, thoracic, and lumbar diseases to occur. If there were no hard block (as described above) inserted inside the padded member as described, the sitter's pelvis would tilt~~, distort~~ freely, leading to ~~degenerative exhaustion~~wrong sitting postures.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be better understood when consideration is given to the following detailed description thereof. Such description makes reference to the annexed drawings wherein:

FIG. 1 is a left perspective view of a sitting device for prevention of spinal diseases according to the invention.

FIG. 2 is a right perspective view of the sitting device shown in FIG. 1.

FIG. 3 is a cross-sectional view of the sitting device of FIG. 1 along the line A-A' shown in FIG. 2.

FIG. 4 is a cross-sectional view of the sitting device of FIG. 1 along the line B-B' shown in FIG. 2.

FIG.s 5~~-7~~ illustrate how to use the pillow of FIG. 1.

~~FIGs 8a-8c show the energy efficient sitting posture, severe exhaustion sitting posture, and degenerative exhaustion sitting posture, respectively.~~

DETAILED DESCRIPTION OF THE INVENTION

The present invention provides a sitting device that is used for sitting on flat surfaces. The sitting device is able to keep the sitter in a ~~upright~~ correct sitting posture, ~~preventing the head, neck, lumbar, spine from being humpbacked, distorted~~ by keeping his pelvis always in its neutral position.

According to the invention, as shown in FIGs 1-5, the sitting device 100, as shown in FIG. 1, comprises a padded member 200, a thin pad 300 extended forwardly from the padded member 200, and a hard block 400 fully inserted inside the padded member 200. Looked from the left side 202L, indicated in FIG. 1, or the right side 202R, indicated in FIG. 2, the padded member 200 has a generally ~~hexagonal~~ right triangular shape, and is made of resilient materials such as foam, rubber, or cotton to make the device 100 comfortable to sit on. The hypotenuse surface 201 of the padded member 200 is undulating ergonomically to ensure extra comfort for the sitter. The area of the hypotenuse surface 201 of the padded member 200 together with the area of the thin pad 300 is wider than the total area of a sitter's buttocks, upper legs, and knees, so that the sitter can sit fully on the sitting device 100 without any part of his body touching the fiat surface. The hard block 400 is made of a non-resilient material such as wood, polystyrene foam, or hard rubber~~, etc~~. The hard block having a terraced shape 400 is able to tolerate, without ~~deformation~~rupturing, the gravity force on a mass of an adult's body with a shape and size similar to those of the adult's buttocks. ~~and this hard block is computed so that its height can fill in the distance from the lowest point of the sacrum to the lowest point of the sitting tuberosity, and the~~ The height H , indicated in FIG. 3, of the front side 403 of the hard block 400, is greater than the distance from the lowest point of the sitter's coccyx to the lowest point of his ~~sitting tuberosities of the sacrum~~tuberosity of ischium~~, thereby always raising the sacrum, coccyx above two sitting tuberosities of the pelvis in order to occupy this entire distance, assisting the coccyx always being in a position higher than that of the sitting tuberosities, therefore this hard block can tightly keep the pelvis, sacrum in a upright and symmetric posture this property of the hard block can ensure the pelvis, sacrum being in a upright and symmetric posture, and the hard block of this height has a terraced shape in the top to bottom according to anatomical proportion, thereby preventing the spine from being humpbaked, bent, distorted when directly sit on the hard floor, the hard block is disposed inside the soft padded member having dimensions similar to those of an adult's buttocks~~. The hard block 400 is inserted completely inside the highest area of the padded member 200. Both the padded member 200 and the hard block 400 have a flat bottom side to ensure stability.

~~According to FIGs. 5-7, to~~ To use the sitting device 100 properly, a sitter needs to sit in a leg-folding sitting posture in which, his buttocks are on top of the highest portion T, indicated in FIG. 3, of the padded member 200, his upper legs lie along the hypotenuse surface 201 of the padded member 200, and both of his left and right lower legs must rest inside the thin pad 300 and fold along the long side L, indicated in FIG. 2, of the thin pad 300, and the ~~foot of one leg is adjacent to the knee of the other leg~~right one is on top of the left one. Instead, the sitter can also sits in a cross-legged sitting posture a.k.a. Lotus sitting posture ~~(see FIG. 7)~~. Importantly, the sitter needs to adjust his buttocks so that his sacrum is elevated by the highest area 401 of the hard block 400, his coccyx rests on the plateau area 402 of the hard block 400, and his ischium stays close to the front side 403 of the hard block 400.

That way, his pelvis is always "locked" in its neutral position, making the sitter sit in a correct posture which prevents spinal diseases related to wrong sitting postures including cervical, thoracic, and lumbar diseases to occur. If there were no hard block 400 inserted inside the padded member 200 as described, the sitter's pelvis would tilt freely, leading to ~~the asymmetry of the sacrum, coccyx and the spine being distorted, humpbacked, loss of the normal curvature~~wrong sitting postures.

CLAIM

What is claimed is:

~~1. A sitting device for prevention of spinal diseases comprises a padded member, a thin pad extended forwardly from the padded member, and a hard block fully inserted inside the padded member;~~

~~when looked from the left or the right side, the padded member has a generally hexagonal shape, having a terraced shape, and is made of resilient materials such as foam, rubber, or cotton to make the device comfortable to sit on; the area of the hypotenuse surface of the padded member together with the area of the thin pad is wider than the total area of a sitter's buttocks, upper legs, and knees so that the sitter can sit, in a leg-folding posture, fully on the sitting device without any part of his body touching the flat surface of the floor outside;~~

~~the hard block is disposed inside a soft padded member, made of a non-resilient material such as wood, polystyrene foam, or hard rubber; the hard block is able to tolerate, without deformation, the gravity force on a mass of an adult's body and this hard block is computed so that its height can fill in the distance from the lowest point of the sacrum to the lowest point of the sitting tuberosity, the height of the front side of the hard block is greater than the distance from the lowest point of the sitter's coccyx to the lowest point of his tuberosity of the sacrum, therefore this hard block can tightly keep the pelvis, sacrum in a upright and symmetric posture, and the hard block of this height has a terraced shape in the top to bottom according to anatomical proportion, to ensure supporting each part, of the sacrum, coccyx, seating tuberosities, in order to keep the pelvis and sacrum being upright, symmetric, there by preventing the cervical, thoracic, lumbar spine from being spinal diseases.~~

1. A sitting device for prevention of spinal diseases comprises

a terraced shape padded member configured to receive and support a user's sacrum at a first area of the padded member, a user's coccyx at a second area of the padded member, and a user's ischium of a user's pelvic bone at a third area of the padded member, and

a terraced shape hard block fully inserted inside the padded member, wherein the hard block is arranged to receive and support a user's sacrum at a first area of the hard block,

and a user's coccyx at a second area of the hard block, and a user's ischium stays close to a front area of the hard block.

2. The sitting device according to claim 1, further comprising a thin pad extending from the third area of the padded member.

3. The sitting device according to any preceding claim, wherein the height of the front area of the hard block is greater than the distance from the lowest point of the user's coccyx to the lowest point of a user's tuberosity of ischium.

4. The sitting device according to any preceding claim, wherein the surface of the padded member which the user sits on is undulating ergonomically.

5. The sitting device according to any preceding claim, wherein the padded member is made of a resilient material.

6. The sitting device according to claim 5, wherein the resilient material is any one from the group comprising: foam, rubber, and cotton.

7. The sitting device according to any preceding claim, wherein the hard block is made of a non-resilient material able to tolerate a gravity force on a mass of an adult without rupturing.

8. The sitting device according to claim 8, wherein the non-resilient material is any one from the group comprising: wood, polystyrene foam, and hard rubber.

9. The sitting device according to any preceding claim, wherein the padded member and the hard block both have a flat bottom side to ensure stability.