

ORTHOPEDIC PILLOW FOR TREATMENT AND PREVENTION OF LUMBAR AND THORACIC SPINE DISEASES

5 FIELD OF THE INVENTION

The present invention generally relates to a pillow, and in particular, to an orthopedic pillow used for treatment and prevention of lumbar and thoracic spine diseases.

BACKGROUND OF THE INVENTION

10 The spine carries all the weight of a person's body and head, and the constant pressure from this weight is what usually leads to many spinal diseases.

Lumbar spine are the largest segments of the movable part of the vertebral column. As a normal part of aging, lumbar vertebrate degeneration happens and creates many health problems. Among those, disc herniation and spondylolisthesis are popular ones. Flat-back
15 syndrome and lumbar kyphosis also happen, but at a lower rate. Approximately 90% of disc herniations occur toward the bottom of the spine at L4-L5 or L5-S1, which cause pain in the L5 nerve or S1 nerve, respectively. A herniation in this area puts direct pressure on the nerve, which causes lumbar radiculopathy. Similar symptoms are observed when spondylolisthesis occurs.

20 Similar to lumbar spine, thoracic spine also faces degeneration problem, which leads to disc herniation and spondylolisthesis. However, thoracic spine faces kyphosis much more often.

Several attempts have been made to cure the diseases of lumbar and thoracic spine, some
25 of which were artificial disc replacement, back bracing, therapeutic drugs, and chiropractic care. Artificial disc replacement is used when disc herniation happens; however, this method is not for everyone, especially not for those with osteoporosis, joint disease, and allergy to stainless steel. In addition, artificial disc replacement requires a discectomy, which may lead to other complications such as infection, excessive bleeding,
30 and damages to nerves. A back brace may be used to support the spine in the case of

spondylolisthesis, however, the brace is not able to push the vertebra back to its normal position. Drugs such as acetaminophen and NSAIDs can reduce pain; unfortunately, they are only temporary. In addition to the drugs' limited ability of treat spine diseases, they cause liver and kidney damage, gastrointestinal bleeding, and ulcers. Chiropractic care
5 seems to be a safer option of the three treatments. Chiropractors use spinal effective manipulation techniques, such as instrument-assisted manipulation, to treat patients. However, in the process of treatments, there is a risk of putting excessive forces on the patients's spine that may lead to damaging it. On the other hand, if the chiropractors treat the diseases with safer thus much less intensive forces, the treatment period is normally
10 lengthy. The treatment period is even prolonged given the fact that patients can only spend one to two hours a day with chiropractors. To treat the diseases safely and to shorten the treatment period, it becomes necessary to have a device that can replicate the safe forces applied by the chiropractors, and that is handy enough for patients to use it whenever needed in order to increase the treatment time each day, thus to shorten the
15 treatment period.

There are many devices have been invented to provide support to lumbar and thoracic spine. However, most of them help prevent spine diseases but do not treat the diseases. US Pat. No. 5,863,095 shows a lobed resilient lumbar pillow to support the lower back of
20 a person. US Pat. No. 5,551,752 shows a cushion for supporting the lumbar area of the back of a person. US Pat. No. 6,823,549 shows a cushion for prevention and treatment of decubitus ulcers but not spine diseases. US. Pat. No. 4,502,170 provides a method for improving posture and relieving back pain but not treat spine diseases.

25 Given that, the present device has been invented to treat, not only to prevent, lumbar spine diseases including lumbar and thoracic disc herniation, spondylolisthesis, and thoracic kyphosis.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide an orthopedic pillow that treat, and prevent, lumbar and thoracic spine diseases. These diseases include lumbar and thoracic disc herniation, spondylolisthesis, and thoracic kyphosis.

According to the invention, an orthopedic pillow for treatment of lumbar and thoracic spine diseases comprises a padded member and a hard block fully inserted inside the padded member. The padded member is made of resilient materials such as foam, rubber, or cotton. The shape of the padded member is roughly similar to that of a rectangular block; wherein the padded member has a flat bottom side, a top side, vertically flat left and right sides (first and second sides), and curved front and back sides (third and fourth sides) arranged such that the top side is perpendicular to the adjacent left, right, top and bottom sides (first, second, third and fourth sides); however, if looked right from its right or left side, the padded member has a symmetric bell shape, whose bottom is broader than the top to ensure stability. The length of the long side of the padded member is roughly equal to an adult's body's width.

The hard block is made of non-resilient material such as wood, polystyrene foam, or hard rubber. The hard block is able to tolerate, without rupturing, the gravity force on a mass of about 140 kg with a shape and size similar to those of a person's body. The shapes of the hard block and of the padded member are similar to each other, and their dimensions are proportional. The length of the long side of the hard block is also roughly equal to an adult's body's width. Both the padded member and the hard block have a flat bottom side.

To use the pillow to treat lumbar and thoracic diseases including disc herniation, spondylolisthesis, and thoracic kyphosis, a person needs to be in supine position, and then puts the pillow under his back so that the long side of the pillow is

perpendicular to his spine. The pillow needs to be positioned right under the herniated disc, slipped vertebra, or kyphotic area. Under the gravity force of the person's body, the hard block generates a vertical reaction force that gradually pushes the herniated disc or the slipped vertebra back to its normal position, or gradually adjusts the kyphotic thoracic spine back to its normal curve. The reason the hard block is made of non-resilient materials, instead of resilient materials, is not only to ensure that the reaction force is not absorbed excessively therefore its magnitude stays at a certain level but also to keep the reaction force always vertical and consistent in strength over time. The padded member is made of resilient materials to mildly absorb the person's body's gravity force, therefore reducing the reaction force generated by the hard block, giving the person comfort when using the pillow.

As the top of the padded member is wider, at a certain ratio, than the top of the hard block, , the padded member spreads the reaction force, reducing the pressure the pillow puts on a certain area of the person's body to the level that is adequate to treat the diseases while not damaging the spine. Furthermore, the height of the pillow is computed so that the magnitude of the gravity force, therefore of the reaction force, is at the right level to treat the diseases, not too high to damage the spine or too low to reduce the treatment effect of the pillow.

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 right perspective view of an orthopedic pillow for treatment and prevention of lumbar and thoracic diseases according to the invention.

FIG. 2 is a left perspective view of the pillow shown in FIG. 1.

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

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

FIG. 5 illustrates how to use the pillow of FIG. 1.

DETAILED DESCRIPTION OF THE INVENTION

The present invention provides an orthopedic pillow that is used for treating and preventing lumbar and thoracic spine diseases including lumbar and thoracic disc herniation, spondylolisthesis, and thoracic kyphosis.

As shown in Figures 1 -4, the said pillow 100 comprises a padded member 200 and a hard block 300 fully inserted inside the padded member 200. The padded member 200 is made of resilient materials such as foam, rubber, or cotton. The padded member 200's shape is roughly similar to that of a rectangular block; however, if looked right from its right side or left side 202, the padded member 200 has a symmetric bell shape whose bottom 202B is broader than the top 202T to ensure stability. The length of the long side of the padded member 200 is roughly equal to an adult's body's width.

The hard block 300 is made of non-resilient material such as wood, polystyrene foam, or hard rubber. The hard block 300 is able to tolerate, without rupturing, the gravity force on a mass of about 140 kg with a shape and size similar to those of a person's body. The shape of the hard block 300 and of the padded member 200 are similar, and their dimensions are proportional. The length of the long side of the hard block 300 is also roughly equal to an adult's body's width.

Both the padded member 200 and the hard block 300 have flat bottom sides 203 and 303, respectively, as shown in FIG. 3.

FIG. 5 illustrates how to use the pillow 100. To use the pillow 100 to treat lumbar and thoracic diseases including disc herniation, spondylolisthesis, and thoracic kyphosis, a person needs to be in supine position, and then puts the pillow 100 under his back so that the long side of the pillow 100 is perpendicular to his spine.

The pillow 100 needs to be positioned right under the herniated disc or slipped vertebra. Under the gravity force F_1 of the person's body, the hard block 300 generates a vertical reaction force F_2 that gradually pushes the herniated disc or the slipped vertebra back to its normal position or gradually adjusts the kyphotic thoracic spine back to its normal curve.

The reason the hard block 300 is made of non-resilient materials, instead of resilient materials, is not only to ensure that the reaction force F_2 is not absorbed excessively therefore its magnitude stays at a certain level but also to keep the reaction force F_2 always vertical and consistent in strength over time. The padded member 200 is made of resilient materials to mildly absorb the person's body's gravity force F_1 , therefore reducing the reaction force F_2 generated by the hard block 300, giving the person comfort when using the pillow 100.

As the top 202T of the padded member 200 is wider, at a certain ratio, than the top 302T of the hard block 300, the padded member 200 spreads the reaction force F_2 , reducing the pressure the pillow 100 puts on a certain area of the person's body to the level that is adequate to treat the diseases while not damaging the spine. Furthermore, the height H of the pillow 100, as indicated in FIG. 3, is computed so that the magnitude of the gravity force F_1 , therefore of the reaction force F_2 , is at the right level

to treat the diseases, not too high to damage the spine or too low to reduce the treatment effect of the pillow 100.

CLAIM

What is claimed is:

1. An orthopedic pillow for treatment and prevention of lumbar and thoracic spine
5 diseases comprising:
a padded member made of resilient materials such as foam, rubber, or cotton, and a
solid block fully inserted inside the padded member, which is made of non-resilient
material such as wood, polystyrene foam, or hard rubber;
wherein the padded member and solid block each has a flat bottom side, a top side,
10 vertically flat first and second sides, curved third and fourth sides, arranged such that the
top side is perpendicular to the adjacent first, second, third, and fourth sides, and a
symmetric bell shape cross section when viewed from the first or second side with the
bottom of the bell shape cross section being broader than the top of the bell shape cross
section;
15 wherein the length of the long side of the padded member is roughly equal to an adult's
body's width.
2. The orthopaedic pillow according to claim 1, wherein a user's weight exerts a first
force on the solid block, and the solid block exerts a second force in an opposite direction
20 to the first force to adjust a spine of the user back to its normal position or curve.
3. The orthopaedic pillow according to any preceding claim, wherein the solid block
is able to tolerate, without rupturing, a gravitational force acting on a mass up to about 140
kg with a shape and size similar to a human body.