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CHAIR, AND LOWER-LIMB EXERCISE SYSTEM

Abstract

A chair includes: two coxal bone support balloons that support two coxal bones respectively; and a sacral bone support balloon that supports one of a sacral bone and a coccygeal bone. The two coxal bone support balloons are configured to be able to rock relative to the sacral bone support balloon. In this configuration, the movability of a sacroiliac joint between the two coxal bones and the sacral bone is improved, and therefore, the mechanical stress on a lumbar region joint, on which a load increases in compensation for an insufficient movability of the sacroiliac joint, is curbed, so that a low back pain is relieved.

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority to Japanese Patent Application No. 2024-018084 filed on Feb. 8, 2024, incorporated herein by reference in its entirety.

BACKGROUND

1. Technical Field

[0002] The present disclosure relates to a chair, and a lower-limb exercise system.

2. Description of Related Art

[0003] It is said that 97% of chronic low back pains are caused by mechanical factors and 80% are non-specific low back pains for which the definite diagnosis based on an image diagnosis is difficult and medical treatment has not been appropriately performed. Patients with such low back pains go to orthopedic surgeries, receive painkillers and periodic massages, and are planned to receive rehabilitation with exercise therapy for several months. It is known that the low back pain is eliminated by continuing an exercise for moving the pelvis to improve the movability. However, a long time, for example, several months, is needed to take the effect. It is difficult to maintain motivation and continue going to the hospital in the case that it is difficult to actually feel the effect.

[0004] It is known that most of non-specific chronic low back pains that are not specified by the image diagnosis in many orthopedic surgeries falls under three kinds: a sacrococcygeal pain, a myofascial pain and a facet joint pain, based on strict examinations. The three low back pains are caused by the mechanical stress on the low back. One of the causes is a long-time sitting posture. The sitting in the same posture through the day causes the pain of the waist or hip, or the enlargement of the lower limb. There are pointed out problems of the fixed sitting posture, as exemplified by the muscle fatigue and circulatory disorder due to muscle contraction, the nutrition disorder of the intervertebral disk, and the circulatory disorder due to the press of a bearing surface.

[0005] Japanese Unexamined Patent Application Publication No. 2023-005485 discloses a chair in which a seat of the chair is configured to be able to rock and thereby the seat performs an inclination action with a cycle action (for example, a foot pedaling operation) of both legs of a user. Thereby, a kinetic chain in which the motion of the feet of the user propagates over the whole body as the motion of the legs and the motion of the lumbar region occurs, so that a high exercise effect is obtained. Thereby, it is possible to realize a healthy chair that makes it possible to overcome a lack of exercise even in a sitting state.

SUMMARY

[0006] Meanwhile, there is a high need for a chair that can relieve the low back pain and has a high health effect.

[0007] An object of the present disclosure is to provide a chair that can relieve the low back pain and has a high health effect.

[0008] A chair includes: two first support portions that support two coxal bones respectively; and a second support portion that supports one of a sacral bone and a coccygeal bone. The two first support portions are configured to be able to rock relative to the second support portion. In this configuration, the movability of a sacroiliac joint between the two coxal bones and the sacral bone is improved, and therefore, the mechanical stress on a lumbar region joint, on which a load increases in compensation for an insufficient movability of the sacroiliac joint, is curbed, so that the low back pain is relieved.

[0009] The two first support portions may be configured to be able to rock relative to each other. In this configuration, the rocking of the two first support portions relative to the second support portion is promoted, and therefore, the effect of the relief of the low back pain is enhanced.

[0010] The chair may further include a chair body; and two elastic coupling portions that couple the two first support portions to the chair body respectively, in which the two first support portions are configured to be able to rock in a pitch direction and a roll direction due to elastic deformation of the two elastic coupling portions. In this configuration, a simple configuration allows the two first support portions to rock in the pitch direction and the roll direction.
[0011] At least one of the two first support portions and the second support portion may be configured such that the position of the at least one of the two first support portions and the second support portion is able to be adjusted depending on the physical constitution of a user. In this configuration, it is possible to adjust the position of the at least one of the two first support portions and the second support portion, depending on the physical constitution of the user.
[0012] A lower-limb exercise system including the above chair; and a lower-limb exercise apparatus with which a user performs a lower-limb exercise in a state where the user is sitting in the chair is provided. In this configuration, a lower-limb exercise system having an advantage in the relief of the low back pain is realized.
[0013] In the present disclosure, the movability of the sacroiliac joint between the two coxal bones and the sacral bone is improved, and therefore, the mechanical stress on the lumbar region joint, on which a load increases in compensation for an insufficient movability of the sacroiliac joint, is curbed, so that the low back pain is relieved.

Description

BRIEF DESCRIPTION OF THE DRAWINGS
[0014] Features, advantages, and technical and industrial significance of exemplary embodiments of the disclosure will be described below with reference to the accompanying drawings, in which like signs denote like elements, and wherein:
[0015] FIG. **1** is a skeleton diagram of a pelvis;
[0016] FIG. **2** is a schematic view of a lower-limb exercise system;
[0017] FIG. **3** is a side view of a chair;
[0018] FIG. **4** is an elevational view of the chair;
[0019] FIG. **5** is a side view for describing the support of the pelvis by the chair;
[0020] FIG. **6**A is a side view of a coxal bone support balloon coupling portion; and
[0021] FIG. **6**B is a side view of the coxal bone support balloon coupling portion.
DETAILED DESCRIPTION OF EMBODIMENTS
[0022] The present disclosure will be described below with a mode for carrying out the disclosure. The disclosures according to the claims are not limited to the following embodiment. Further, all configurations described in the embodiment are not essential as means for solving the problem. For clear descriptions, in the following descriptions and the drawings, omission and simplification are performed when appropriate. In the drawings, identical elements are denoted by identical reference characters, and repetitive descriptions are omitted as necessary.
[0023] First, the skeleton of a pelvis will be schematically described with reference to FIG. **1**. As shown in FIG. **1**, the pelvis is constituted by a sacral bone, a coccygeal bone, and two coxal bones. Furthermore, cach coxal bone is constituted by an iliac bone, a pubic bone, and an ischial bone. Moreover, a joint that connects the iliac bone and the sacral bone is called a sacroiliac joint.
[0024] FIG. **2** shows a side view of a lower-limb exercise system **1**. As shown in FIG. **2**, the lower-limb exercise system **1** includes a chair **2** and a foot pedaling exercise apparatus **3**. The foot pedaling exercise apparatus **3** is a specific example of the lower-limb exercise apparatus. The foot pedaling exercise apparatus **3** is an exercise apparatus for allowing a user sitting in the chair **2** to perform a foot pedaling exercise in the sitting state. The foot pedaling exercise apparatus **3** includes an exercise apparatus body **3***a* and a pair of pedals **3***b* supported by the exercise apparatus body **3***a*.

Typically, each distal end of the pedals **3***b* moves along an elliptical orbit in lateral view, and each rear end of the pedals **3***b* reciprocates horizontally in lateral view. The lower-limb exercise apparatus is not limited to the foot pedaling exercise apparatus **3**, and may be a foot stepping exercise apparatus. The lower-limb exercise apparatus may be a lower-limb exercise apparatus with which the feet are slid back and forth, or may be a thigh rising exercise device with which the feet are moved up and down.

[0025] FIG. **3** shows a side view of the chair **2**. FIG. **4** shows an elevational view of the chair **2**. As shown in FIG. **3** and FIG. **4**, the chair **2** includes a chair body **4**, two coxal bone support balloons **5**, two coxal bone support balloon coupling portions **6**, a sacral bone support balloon **7**, a sacral bone support balloon coupling portion **8**, and a backrest **9**.

[0026] The chair body **4** is a frame structure that supports the two coxal bone support balloons **5**, the two coxal bone support balloon coupling portions **6**, the sacral bone support balloon **7**, the sacral bone support balloon coupling portion **8**, and the backrest **9**. The chair body **4** includes a main frame **10**, a position adjustment mechanism **11**, and two handrests **12**.

[0027] The main frame **10** includes two lower frames **20** that extend in a front-rear direction, two upper frames **21** that extend in the front-rear direction, two front perpendicular frames **22** that extend perpendicularly, and two rear perpendicular frame **23** that extend perpendicularly.

[0028] The two lower frames **20** are disposed so as to be away from each other in a right-left direction. The two upper frames **21** are disposed so as to be away from each other in the right-left direction. The two upper frames **21** are disposed above the two lower frames **20**, respectively.

[0029] The two front perpendicular frames **22** couple front ends of the two lower frames **20** and front ends of the two upper frames **21**, respectively. The two rear perpendicular frames **23** couple rear ends of the two lower frames **20** and rear ends of the two upper frames **21**, respectively.

[0030] The two handrests **12** are supported by the two front perpendicular frames **22** and the two rear perpendicular frames **23**.

[0031] The front-rear direction and the right-left direction are defined on the basis of the body trunk of the user sitting in the chair **2**. The front-rear direction is a direction orthogonal to a coronal plane. The right-left direction is a direction orthogonal to a sagittal plane.

[0032] The position adjustment mechanism **11** is disposed between the two lower frames **20**, and is supported by the two lower frames **20**. The position adjustment mechanism **11** is configured to be able to adjust the positions of the two coxal bone support balloons **5** in the front-rear direction and the right-left direction. The position adjustment mechanism **11** includes a first position adjustment mechanism **11**A for adjusting the position of one coxal bone support balloon **5** and a second position adjustment mechanism **11**B for adjusting the position of the other coxal bone support balloon **5**. The configuration of the first position adjustment mechanism **11**A and the configuration of the second position adjustment **25** mechanism **11**B are similar to each other. Therefore, the first position adjustment mechanism **11**A will be described below, and the description of the second position adjustment mechanism **11**B will be omitted.

[0033] The first position adjustment mechanism **11**A includes two right-left adjustment frames **30** that extend in the right-left direction, and a front-rear adjustment frame **30** **31**. The two right-left adjustment frame **30** are disposed so as to be away from each other in the front-rear direction. The two right-left adjustment frames **30** are disposed between the two lower frames **20**, and are coupled to the two lower frames **20**. The front-rear adjustment frame **31** is disposed between the two right-left adjustment frames **30**, and is coupled to the two right-left adjustment frames **30**. The front-rear adjustment frame **31** is coupled to the two right-left adjustment frames **30**, such that the position of the front-rear adjustment frame **31** can be adjusted in the right-left direction. One coxal bone support balloon **5** is coupled to the front-rear adjustment frame **31** through one coxal bone support balloon coupling portion **6**. Thereby, the distance between the two coxal bone support balloons **5** in the right-left direction can be freely adjusted. Further, each coxal bone support balloon coupling portion **6** is coupled to the corresponding front-rear adjustment frame **31**, such that the position of the coxal bone support balloon coupling portion **6** can be adjusted in the front-rear direction. Thereby, the position of each coxal bone support balloon **5** in the front-rear direction can be freely adjusted.

[0034] Each coxal bone support balloon **5** is a specific example of the first support portion. Each coxal bone support balloon **5** supports the corresponding coxal bone of the user. Specifically, as shown in FIG. **5**, each coxal bone support balloon **5** is disposed so as to face the ischial of the corresponding coxal bone of the user in the vertical direction. That is, cach coxal bone support balloon **5** includes a bearing surface **5***a* that is oriented upward. Typically, the coxal bone support balloon **5** is made of polyvinyl chloride, and has a certain degree of cushioning property. The first support portion only needs to be configured to have a certain degree of cushioning property, and may be a cushioning member, as exemplified by urethane foam having an open-cell structure or a closed-cell structure, instead of the coxal bone support balloon **5**.

[0035] FIG. **6**A and FIG. **6**B illustrate the coxal bone support balloon coupling portion **6**. The coxal bone support balloon coupling portion **6** is a specific example of the clastic coupling portion. As shown in FIG. **6**A and FIG. **6**B, cach coxal bone support balloon coupling portion **6** couples the corresponding coxal bone support balloon **5** to the front-rear adjustment frame **31**, such that the corresponding coxal bone support balloon **5** can rock in a roll direction and a pitch direction.

[0036] As shown in FIG. **6**A, as an example, each coxal bone support balloon coupling portion **6** may be constituted by a coil spring **40** and a universal joint **41**. The universal joint **41** includes an upper link **41***a* that extends from the coxal bone support balloon **5**, a lower link **41***b* that extends from the front-rear adjustment frame **31**, and a joint portion **41***c* that couples the upper link **41***a* and the lower link **41***b*. In this configuration, when the corresponding coxal bone support balloon **5** rocks in the roll direction or the pitch direction, the coil spring **40** clastically deforms. By the elastic restoring force of the coil spring **40**, the corresponding coxal bone support balloon **5** elastically returns to a neutral position (reference position). The universal joint **41** may be excluded.

[0037] As shown in FIG. **6**B, as an example, each coxal bone support balloon coupling portion **6** may be constituted by a rubber pole **42**. In this configuration, when the corresponding coxal bone support balloon **5** rocks in the roll direction or the pitch direction, the rubber pole **42** clastically deforms. By the elastic restoring force of the rubber pole **42**, the corresponding coxal bone support balloon **5** clastically returns to a neutral position (reference position).

[0038] Back to FIG. **3**, the sacral bone support balloon **7** is a specific example of the second support portion. The sacral bone support balloon **7** supports one of the sacral bone and coccygeal bone of the user. The sacral bone support balloon **7** supports one of the sacral bone and coccygeal bone of the user, so as to restrain the motion of the one of the sacral bone and coccygeal bone of the user. In the embodiment, as shown in FIG. **5**, the sacral bone support balloon **7** supports the coccygeal bone of the user from an obliquely downward side, so as to restrain the motion of the coccygeal bone of the user. In other words, a contact surface **7***a* of the sacral bone support balloon **7** that contacts with user is oriented obliquely upward. Thereby, it is possible to expect an effect of tilting the pelvis of the user forward. However, instead of this, the sacral bone support balloon **7** may support the sacral bone of the user from an obliquely upward side, so as to restrain the motion of the sacral bone of the user. In this case, a contact surface **7***a* of the sacral bone support balloon **7** that contacts with the user extends horizontally or is oriented obliquely downward. The sacral bone and the coccygeal bone are fixed to each other. Therefore, when the motion of the sacral bone is restrained, the motion of the coccygeal bone is also restrained, and when the motion of the coccygeal bone is restrained, the motion of the sacral bone is also restrained. In this way, for restraining the motion of the sacral bone of the user, the sacral bone support balloon **7** may directly restrain the motion of the sacral bone by facing the sacral bone, or may indirectly restrain the motion of the sacral bone by facing the coccygeal bone. Typically, the sacral bone support balloon **7** is made of polyvinyl chloride, and has a certain degree of cushioning property. The second support portion only needs to be configured to have a certain degree of cushioning property, and may be a cushioning member, as exemplified by urethane foam having an open-cell structure or a closed-cell structure, instead of the sacral bone support balloon **7**.

[0039] The balloon means a soft support member that contacts with the body surface and thereby can support the load and deform. The balloon is constituted by a member that contains air or liquid and that expands and contracts.

[0040] Back to FIG. **3**, the sacral bone support balloon coupling portion **8** couples the sacral bone support balloon **7** and the chair body **4**. As an example, the sacral bone support balloon coupling portion **8** is constituted by a coil spring and a universal joint, similarly to the coxal bone support balloon coupling portion **6**. Thereby, the sacral bone support balloon **7** can rock with respect to the chair body **4** from right to left or up and down. However, as described above, the sacral bone support balloon **7** is provided for restraining the motion of the sacral bone of the user, and therefore, the configuration in which the sacral bone support balloon **7** can rock with respect to the chair body **4** from right to left or up and down is not essential. On the contrary, it is allowable to adopt a configuration the sacral bone support balloon **7** hardly rocks or cannot rock with respect to the chair body **4**. In this case, the sacral bone support balloon coupling portion **8** may be constituted by a member that hardly clastically deforms or cannot elastically deform. Thereby, the sacral bone support balloon coupling portion **8** couples the sacral bone support balloon **7** to the chair body **4**, such that the sacral bone support balloon **7** hardly rocks or cannot rock.

[0041] The position and attitude of the sacral bone support balloon **7** may be able to be adjusted depending on the physical constitution of the user. In the embodiment, the sacral bone support balloon coupling portion **8** is configured such that the position is able to be adjusted in an up-down direction with respect to the chair body **4**. In addition to this, the elevation-depression angle of the sacral bone support balloon coupling portion **8** in the longitudinal direction may be able to be adjusted. Further, the length of the sacral bone support balloon coupling portion **8** may be able to be adjusted. When the position and attitude of the sacral bone support balloon **7** are able to be adjusted in this way, the position and attitude of the sacral bone support balloon **7** depending on the physical constitution of the user are realized. In addition, when the position and attitude of the sacral bone support balloon **7** are able to be adjusted in this way, the sacral bone support balloon **7** can support one of the sacral bone and coccygeal bone of the user, so as to stably restrain the motion of the one of the sacral bone and coccygeal bone of the user, regardless of whether the pelvis of the user sitting in the chair **2** is tilted forward or tilted rearward.

[0042] Subsequently, with reference to FIG. **3**, the backrest **9** is disposed above the sacral bone support balloon **7**. The backrest **9** may be excluded.

[0043] In this configuration, when the user sits in the chair **2** as shown in FIG. **2**, the iliac bones of the two coxal bones face the two coxal bone support balloons **5** in the vertical direction, respectively, and the coccygeal bone faces the sacral bone support balloon **7** in an oblique direction. That is, the self-weight of the body trunk of the user is supported by the two coxal bone support balloons **5** and the sacral bone support balloon **7**. In this state, the two coxal bone support balloons **5** can rock relative to the sacral bone support balloon **7**, and thereby, the movability of the sacroiliac joint is improved. More specifically, the sacral bone support balloon **7** is configured to hardly rock or be unable to rock, and the two coxal bone support balloons **5** are configured to be able to rock. Thereby, the motion of the sacral bone of the user sitting in the chair **2** is restrained, and the two iliac bones can be freely moved in the pitch direction and the roll direction.

[0044] In this state, when the user performs the foot pedaling exercise using the foot pedaling exercise apparatus **3** as shown in FIG. **2**, the two iliac bones are alternately moved mainly in the pitch direction with the foot pedaling exercise of both legs. At this time, the motion of the sacral bone is restrained, and therefore, the joint exercise of the sacroiliac joint coupling the sacral bone and the iliac bones is significantly promoted as shown in FIG. **1**, so that the movability of the sacroiliac joint is improved. With the above chair **2**, the following effects can be expected.

[0045] (1) First, when the foot pedaling exercise is performed in the sitting state, the right and left coxal bones are turned in the pitch direction by the foot pedaling exercise, while the motion of the sacral bone is restrained by the sacral bone support balloon **7**. Since the coxal bones are moved while the motion of the sacral bone is restrained, the movability of the sacroiliac joint is improved. By the recovery of the movability of the sacroiliac joint, the mechanical stress on a lumbar region joint, on which a load increases in compensation for an insufficient movability of the sacroiliac joint, is reduced, so that the low back pain is relieved.
[0046] (2) Second, the chair **2** employs a configuration in which three points of the right and left ischial bones and the sacral bone are supported. A support strut flexibly moves, and therefore, the pelvis is avoided from remaining at the same spot. Accordingly, the pelvis is avoided from remaining in the same posture during sitting, and thereby, the same spot of a muscle site around the waist is avoided from continuing to be used, so that a muscle load decreases. The risk of low back pain development due to the same posture for a long time is reduced. Since the pelvis is moved, the muscle around the pelvis is prevented from becoming stiff.
[0047] (3) Unlike an ordinary fixed bearing surface, the motion of the pelvis is not constrained, and therefore, with the foot pedaling exercise of the lower limbs, the pelvis is moved in the front-rear direction and the right-left direction. The muscle acts with the motion of the lower limbs and the motion of the pelvis. When the foot pedaling exercise is unconsciously performed in the sitting state, the low back pain is relieved. Ordinarily, it is necessary to periodically go to a clinic for continuously receiving manual therapy. However, with the lower-limb exercise system **1** in the embodiment, it is possible to expect an effect of improving the low back pain by at-home training.
[0048] The preferred embodiment of the present disclosure has been described above. The above embodiment has the following characteristics.
[0049] The chair **2** includes the two coxal bone support balloons **5** (first support portions) that support the two coxal bones respectively, and the sacral bone support balloon **7** (second support portion) that supports one of the sacral bone and the coccygeal bone. The two coxal bone support balloons **5** are configured to be able to rock relative to the sacral bone support balloon **7**. In this configuration, the movability of the sacroiliac joint between the two coxal bones and the sacral bone is improved, and therefore, the mechanical stress on the lumbar region joint, on which a load increases in compensation for an insufficient movability of the sacroiliac joint, is curbed, so that the low back pain is relieved.
[0050] The two coxal bone support balloons **5** are configured to be able to rock relative to each other. In this configuration, the rocking of the two coxal bone support balloons **5** relative to the sacral bone support balloon **7** is promoted, and therefore, the movability of the sacroiliac joint is further increased, so that the effect of the relief of the low back pain is enhanced.
[0051] The chair **2** further includes the chair body **4**, and the two coxal bone support balloon coupling portions **6** (elastic coupling portions) that couple the two coxal bone support balloons **5** to the chair body **4** respectively. The two coxal bone support balloons **5** are configured to be able to rock in the pitch direction and the roll direction due to the elastic deformation of the two coxal bone support balloon coupling portions **6**. In this configuration, a simple configuration allows the two coxal bone support balloons **5** to rock in the pitch direction and the roll direction.
[0052] Further, at least one of the two coxal bone support balloons **5** and the sacral bone support balloon **7** is configured such that the position can be adjusted depending on the physical constitution of the user. In this configuration, the position of at least one of the two coxal bone support balloons **5** and the sacral bone support balloon **7** can be adjusted depending on the physical constitution of the user, and therefore, the effect of increasing the movability of the sacroiliac joint using the chair **2** can be enhanced to the maximum.
[0053] Further, the lower-limb exercise system **1** includes the above chair **2**, and the foot pedaling exercise apparatus **3** as the lower-limb exercise apparatus with which the user performs the lower-limb exercise in the state where the user is sitting in the chair **2**. In this configuration, the rocking

of the iliac bones in the pitch direction is realized by the kinetic chain with the foot pedaling exercise, and therefore, the movability of the sacroiliac joint can be efficiently improved.
[0054] The above embodiment can be modified as follows, for example.
[0055] A constituent that holds a part of an abdomen central portion of the user in the state where the user is sitting in the chair **2** may be added to the chair **2**. Thereby, a feeling of the integration of the pelvis of the user and the two coxal bone support balloons **5** and sacral bone support balloon **7** of the chair **2** is enhanced, and therefore, the effect of increasing the movability of the sacroiliac joint is further enhanced. A part of the abdomen central portion means at least one of an epigastric fossa, an umbilical region, and a hypogastric region.
[0056] In the above embodiment, the two coxal bone support balloons **5** can independently rock without interfering with each other. However, instead of this, the two coxal bone support balloons **5** may be coupled to each other, and the two coxal bone support balloons **5** may be configured to be able to integrally perform pitch turning, roll turning, and yaw turning. Even in this case, it is thought that the effect of increasing the movability of the sacroiliac joint is obtained in some degree.
[0057] Further, a hand pedaling exercise apparatus may be used instead of the foot pedaling exercise apparatus **3** or in addition to the foot pedaling exercise apparatus **3**. A descending kinetic chain with a hand pedaling exercise further promotes the motion of the two coxal bones, and therefore, contributes to the increase in the movability of the sacroiliac joint.
[0058] Further, in the above embodiment, the positions of the two handrests **12** are fixed. However, instead of this, the two handrests **12** may be alternately moved by an unillustrated actuator. Even in this case, it is thought that the motion of the two coxal bones is further promoted by the descending kinetic chain. As the way to move the two handrests **12**, first, the two handrests **12** are moved such that the positions of the two handrests **12** become positions different from each other in the pitch direction. Second, the two handrests **12** are alternately moved back and forth such that the front-rear directional positions of the two handrests **12** become positions different from each other. Third, the two handrests **12** are alternately moved up and down such that the height positions of the two handrests **12** become positions different from each other.
[0059] Further, the foot pedaling exercise apparatus **3** may be an apparatus with which the user actively performs the foot pedaling exercise, or may be an apparatus with which the user passively performs the foot pedaling exercise. In the case of the latter, typically, it is possible that the pedals **3***b* of the foot pedaling exercise apparatus **3** are driven by an actuator.
[0060] Further, the backrest **9** may be configured to turn around an axis that extends in the longitudinal direction of the backrest **9**. That is, the backrest **9** may be configured to be able to perform yaw turning such that the right shoulder and left shoulder of the user alternately swing back and forth. Thereby, the ascending kinetic chain with the lower-limb exercise and the descending kinetic chain with the upper-limb exercise are realized at a higher level.

Claims

1. A chair comprising: two first support portions that support two coxal bones respectively; and a second support portion that supports one of a sacral bone and a coccygeal bone, wherein the two first support portions are configured to be able to rock relative to the second support portion.
2. The chair according to claim 1, wherein the two first support portions are configured to be able to rock relative to each other.
3. The chair according to claim 1, further comprising: a chair body; and two elastic coupling portions that couple the two first support portions to the chair body respectively, wherein the two first support portions are configured to be able to rock in a pitch direction and a roll direction due to elastic deformation of the two elastic coupling portions.
4. The chair according to claim 1, wherein at least one of the two first support portions and the

second support portion is configured such that a position of the at least one of the two first support portions and the second support portion is able to be adjusted depending on a physical constitution of a user.

5. A lower-limb exercise system comprising: the chair according to claim 1; and a lower-limb exercise apparatus with which a user performs a lower-limb exercise in a state where the user is sitting in the chair.