CLAIMS

[Claim 1] A posture detection system for detecting a posture of a user seated on a cushion, the cushion comprising: a seating portion having a buttock support portion on which a buttock of the user is placed, wherein the buttock support portion includes a pair of ischial support portions configured to support an ischium of the user seated on the seating portion, each comprising a concave portion that is indented from an upper surface of the buttock support portion; and a lumbar support portion having a sacral support portion configured to support a sacrum of the user from behind, the posture detection system comprising:

a seating portion sensor attached to the seating portion and configured to measure whether or not the user is seated on the seating portion;

a sacral support portion sensor attached to the sacral support portion and configured to measure the posture of the user seated on the seating portion;

a posture determination unit configured to determine the posture of the user based on a result measured by the sacral support portion sensor; and

an alarm unit configured to output an alarm if the posture determination unit determines that the posture of the user is unsatisfactory.

[Claim 2] The posture detection system according to claim 1, wherein

the sacral support portion sensor measures whether or not the sacrum of the user is in contact with the sacral support portion sensor, and

the posture determination unit determines that the posture of the

user is hunched if the sacrum of the user is not in contact with the sacral support portion sensor.

[Claim 3] The posture detection system according to claim 1 or 2, wherein

the sacral support portion sensor measures a load applied by the sacrum of the user on the sacral support portion sensor, and

the posture determination unit determines that the posture of the user is excessively leaning backward if the load measured by the sacral support portion sensor is equal to or greater than a predetermined threshold.

[Claim 4] The posture detection system according to claim 1 or 2, wherein

the seating portion includes a pair of thigh support portions aligned along a left-to-right direction as viewed by the user seated on the seating portion, and

the posture detection system further comprises a pair of thigh support portion sensors attached to the pair of thigh support portions, respectively, and configured to measure a load applied by a thigh of the user seated on the seating portion.

[Claim 5] The posture detection system according to claim 1 or 2, further comprising:

a fabric configured to cover at least a part of a core material of the cushion, with the seating portion sensor and the sacral support portion sensor attached to the fabric.

[Claim 6] The posture detection system according to claim 5, further comprising:

an outer fabric that covers the core material, wherein

the fabric is an inner fabric covered by the outer fabric.

[Claim 7] The posture detection system according to claim 4, wherein

a core material of the cushion includes a concave portion formed on the upper surface of the seating portion and a concave portion formed on an upper surface of the thigh support portion, and

the seating portion sensor is embedded in the concave portion of the seating portion, and the thigh support portion sensor is embedded in the concave portion of the thigh support portion.

[Claim 8] The posture detection system according to claim 1 or 2, wherein

the sacral support portion includes a protruding surface with a forward-protruding curved shape and a recessed portion that is indented rearward from the protruding surface, and

the sacral support portion sensor is attached to the recessed portion of the sacral support portion.

[Claim 9] The posture detection system according to claim 4, further comprising:

a fabric configured to cover at least a part of a core material of the cushion, wherein

the fabric is an inner fabric to which the seating portion sensor, the sacral support portion sensor, and the thigh support portion sensor are attached.

[Claim 10] The posture detection system according to claim 5, wherein

the fabric covers only a part of the core material, and

the fabric is fixed to the core material in such a way as to cover the seating portion and the sacral support portion.

[Claim 11] The posture detection system according to claim 4, wherein

the seating portion extends in a first direction and a second direction, the first direction being a front-to-rear direction as viewed by the user seated on the seating portion and the second direction being a left-to-right direction as viewed by the user seated on the seating portion, and

the posture detection system includes,

the two seating portion sensors arranged along the second direction,

the one sacral support portion sensor, and

the two thigh support portion sensors arranged along the second direction.

[Claim 12] The posture detection system according to claim 1 or 2, wherein

the buttock support portion includes a pair of ischial support portions configured to support an ischium of the user seated on the seating portion, and

the seating portion sensor is arranged around each of the paired ischial support portions.

[Claim 13] The posture detection system according to claim 1 or 2, further comprising:

a leg-crossing determination unit configured to determine

whether or not legs of the user seated on the seating portion are crossed.

[Claim 14] The posture detection system according to claim 3, wherein

the posture determination unit determines that the posture of the user is proper if the load measured by the sacral support portion sensor is less than the predetermined threshold.

[Claim 15] The posture detection system according to claim 4, wherein

the posture determination unit calculates a difference in loads applied to the pair of thigh support portion sensors as measured by the thigh support portion sensors.

[Claim 16] The posture detection system according to claim 4, wherein

the posture determination unit calculates an absolute value of a difference between a load applied to one of the thigh support portion sensors by a left thigh and a load applied to the other thigh support portion sensor by a right thigh, determines that a left-to-right balance is unsatisfactory and the posture is improper if the calculated absolute value is equal to or greater than a predetermined threshold, and determines that the left-to-right balance is satisfactory if the calculated absolute value is less than the predetermined threshold.

[Claim 17] The posture detection system according to claim 4, further comprising:

a leg-crossing determination unit configured to determine whether or not legs of the user seated on the seating portion are crossed, wherein

the leg-crossing determination unit determines that the legs of the user are crossed if one of the paired thigh support portion sensors receives a load from the thigh and the other thigh support portion sensor does not receive a load from the thigh.

[Claim 18] The posture detection system according to claim 1 or 2, further comprising:

a seating determination unit configured to determine whether or not the user is seated on the seating portion; and a display unit configured to display a result determined by each of the seating determination unit and the posture determination unit, wherein

the display unit displays, as a time chart, at least one of a seating time period during which the user is seated on the seating portion, a time period during which the posture is proper, a time period during which the posture is hunched, a time period during which the posture is excessively leaning back, a time period during which a left-to-right balance is unsatisfactory, and a time period during which legs of the user are crossed.

[Claim 19] The posture detection system according to claim 1 or 2, further comprising:

a seating determination unit configured to determine whether or not the user is seated on the seating portion; and a display unit configured to display a result determined by each of the seating determination unit and the posture determination unit, wherein

the display unit displays, as a comment, the result determined by the seating determination unit and the result determined by the posture determination unit.

[Claim 20] A posture detection method of detecting a posture of a

user seated on a cushion, the cushion comprising: a seating portion having a buttock support portion on which a buttock of the user is placed; and a lumbar support portion having a sacral support portion configured to support a sacrum of the user from behind, the posture detection method comprising steps of:

measuring whether or not the user is seated on the seating portion by a seating portion sensor attached to the seating portion;

measuring the posture of the user seated on the seating portion by a sacral support portion sensor attached to the sacral support portion;

determining the posture of the user based on a result measured by the sacral support portion sensor; and

outputting an alarm if it is determined that the posture of the user is unsatisfactory in the determining step.