Claims

What is claimed is:

1. A lower limb massage system, the lower limb massage system for receiving a lower limb, including a foot, an ankle, and an upper portion of the lower limb, the lower limb massage system comprising:

a main housing for receiving and housing a lower limb, the main housing having a plurality of portions adjacently arranged to form an L-shaped interior cavity, including:

a tubular portion for housing an upper portion of the lower limb, the tubular portion having at least a first end section at a proximal end of the main housing, the tubular portion formed by an upper left side wall and an upper right side wall opposite to the upper left side wall, the first end section having an opening for allowing an insertion of the lower limb;

an elongated portion for housing the foot, the elongated portion having at least a second end section at a distal end of the main housing, the elongated portion formed by a front top wall and a front bottom wall opposite to the front top wall; and

a corner portion formed between the tubular portion and elongated portion, the corner portion having a corner section separating proximal and distal parts of the corner portion, the proximal part of the corner portion having at least a lower left side wall and lower right side wall opposite to the lower left side wall, the distal part of the corner portion having a rear top wall and rear bottom wall opposite to the rear top wall, the rear bottom wall for use in receiving at least a portion of a heel of the foot;

a plurality of expandable members, including:

a first expandable member provided in the elongated portion and forming at least a portion of the front top wall proximal to the second end section, the first expandable member having a plurality of sections including a first section and a second section, each of the plurality of sections of the first expandable member configurable to expand towards an interior of the elongated portion, wherein the first section of the first expandable member is formed at a first location of the first expandable member that is proximal to a *Neiting* acupressure point of the foot when the foot is housed in the elongated portion, wherein the second section of the first expandable member is formed at a second location of the first expandable member that is proximal to a *Xiaxi* acupressure point of the foot when the foot is housed in the elongated portion, wherein the first section of the first expandable member is configured to purposively expand more than at least one other section of

the first expandable member that surround the first section of the first expandable member in such a way as to purposively apply more targeted pressure to the *Neiting* acupressure point, wherein the second section of the first expandable member is configured to purposively expand more than at least one other section of the first expandable member that surround the second section of the first expandable member in such a way as to purposively apply more targeted pressure to the *Xiaxi* acupressure point;

a second expandable member provided in the corner portion and forming at least a portion of the rear top wall, the second expandable member having a plurality of sections including a first section and a second section, each of the plurality of sections of the second expandable member configurable to expand towards an interior of the corner portion, wherein the first section of the second expandable member is formed at a first location of the second expandable member that is proximal to a *Chongyang* acupressure point of the foot when the foot is housed in the corner portion, wherein the second section of the second expandable member is formed at a second location of the second expandable member that is proximal to a *Jiexi* acupressure point of the foot when the foot is housed in the corner portion, wherein the first section of the second expandable member is configured to purposively expand more than at least one other section of the second expandable member that surround the first section of the second expandable member in such a way as to purposively apply more targeted pressure to the *Chongyang* acupressure point, wherein the second section of the second expandable member is configured to purposively expand more than at least one other section of the second expandable member that surround the second section of the second expandable member in such a way as to purposively apply more targeted pressure to the *Jiexi* acupressure point;

a third expandable member provided in the corner portion and forming at least a portion of the lower left side wall, the third expandable member having a plurality of sections including a first section, a second section, and a third section, each of the plurality of sections of the third expandable member configurable to expand towards an interior of the corner portion, wherein the first section of the third expandable member is formed at a first location of the third expandable member that is proximal to a *Pushen* acupressure point of the foot when the foot is housed in the corner portion, wherein the second section of the third expandable member is formed at a second location of the third expandable member that is proximal to a *Shenmai* acupressure point of the foot when the foot is housed in the corner portion, wherein the third section of the third expandable

member is formed at a third location of the third expandable member that is proximal to a *Jinmen* acupressure point of the foot when the foot is housed in the corner portion, wherein the first section of the third expandable member is configured to purposively expand more than at least one other section of the third expandable member that surround the first section of the third expandable member in such a way as to purposively apply more targeted pressure to the *Pushen* acupressure point, wherein the second section of the third expandable member is configured to purposively expand more than at least one other section of the third expandable member that surround the second section of the third expandable member in such a way as to purposively apply more targeted pressure to the *Shenmai* acupressure point, wherein the third section of the third expandable member is configured to purposively expand more than at least one other section of the third expandable member that surround the third section of the third expandable member in such a way as to purposively apply more targeted pressure to the *Jinmen* acupressure point;

a fourth expandable member provided in the tubular portion and forming at least a portion of the upper left side wall, the fourth expandable member having a plurality of sections including a first section and a second section, each of the plurality of sections of the fourth expandable member configurable to expand towards an interior of the tubular portion, wherein the first section of the fourth expandable member is formed at a first location of the fourth expandable member that is proximal to a *Feiyang* acupressure point of the lower limb when the lower limb is housed in the tubular portion, wherein the second section of the fourth expandable member is formed at a second location of the fourth expandable member that is proximal to a *Waiqu* acupressure point of the lower limb when the lower limb is housed in the tubular portion, wherein the first section of the fourth expandable member is configured to purposively expand more than at least one other section of the fourth expandable member that surround the first section of the fourth expandable member in such a way as to purposively apply more targeted pressure to the *Feiyang* acupressure point, wherein the second section of the fourth expandable member is configured to purposively expand more than at least one other section of the fourth expandable member that surround the second section of the fourth expandable member in such a way as to purposively apply more targeted pressure to the *Waiqu* acupressure point;

a fifth expandable member provided in the tubular portion and forming at least a portion of the upper left side wall, the fifth expandable member having a plurality of sections including a first section and a second section, each of the plurality of sections of the fifth

expandable member configurable to expand towards an interior of the tubular portion, wherein the first section of the fifth expandable member is formed at a first location of the fifth expandable member that is proximal to a *Shangjuxu* acupressure point of the lower limb when the lower limb is housed in the tubular portion, wherein the second section of the fifth expandable member is formed at a second location of the fifth expandable member that is proximal to a *Fenglong* acupressure point of the lower limb when the lower limb is housed in the tubular portion, wherein the first section of the fifth expandable member is configured to purposively expand more than at least one other section of the fifth expandable member that surround the first section of the fifth expandable member in such a way as to purposively apply more targeted pressure to the *Shangjuxu* acupressure point, wherein the second section of the fifth expandable member is configured to purposively expand more than at least one other section of the fifth expandable member that surround the second section of the fifth expandable member in such a way as to purposively apply more targeted pressure to the *Fenglong* acupressure point;

a sixth expandable member provided in the corner portion and forming at least a portion of the lower right side wall, the sixth expandable member having a plurality of sections including a first section and a second section, each of the plurality of sections of the sixth expandable member configurable to expand towards an interior of the corner portion, wherein the first section of the sixth expandable member is formed at a first location of the sixth expandable member that is proximal to a *Shuiquan* acupressure point of the portion of the lower limb when the lower limb is housed in the corner portion, wherein the second section of the sixth expandable member is formed at a second location of the sixth expandable member that is proximal to a *Zhaohai* acupressure point of the lower limb when the lower limb is housed in the corner portion, wherein the first section of the sixth expandable member is configured to purposively expand more than at least one other section of the sixth expandable member that surround the first section of the sixth expandable member in such a way as to purposively apply more targeted pressure to the *Shuiquan* acupressure point, wherein the second section of the sixth expandable member is configured to purposively expand more than at least one other section of the sixth expandable member that surround the second section of the sixth expandable member in such a way as to purposively apply more targeted pressure to the *Zhaohai* acupressure point;

a seventh expandable member provided in the corner portion and forming at least a portion of the lower right side wall, the seventh expandable member having a plurality of sections

including a first section and a second section, each of the plurality of sections of the seventh expandable member configurable to expand towards an interior of the corner portion, wherein the first section of the seventh expandable member is formed at a first location of the seventh expandable member that is proximal to a *Jiaoxin* acupressure point of the portion of the lower limb when the lower limb is housed in the corner portion, wherein the second section of the seventh expandable member is formed at a second location of the seventh expandable member that is proximal to a *Fuliu* acupressure point of the lower limb when the lower limb is housed in the corner portion, wherein the first section of the seventh expandable member is configured to purposively expand more than at least one other section of the seventh expandable member that surround the first section of the seventh expandable member in such a way as to purposively apply more targeted pressure to the *Jiaoxin* acupressure point, wherein the second section of the seventh expandable member is configured to purposively expand more than at least one other section of the seventh expandable member that surround the second section of the seventh expandable member in such a way as to purposively apply more targeted pressure to the *Jiaoxin* acupressure point; and

an eighth expandable member provided in the tubular portion and forming at least a portion of the upper right side wall, the eighth expandable member having a plurality of sections including a first section, a second section, and a third section, each of the plurality of sections of the eighth expandable member configurable to expand towards an interior of the tubular portion, wherein the first section of the eighth expandable member is formed at a first location of the eighth expandable member that is proximal to a *Zhubin* acupressure point of the lower limb when the lower limb is housed in the tubular portion, wherein the second section of the eighth expandable member is formed at a second location of the eighth expandable member that is proximal to a *Chengshan* acupressure point of the lower limb when the lower limb is housed in the tubular portion, wherein the third section of the eighth expandable member is formed at a third location of the eighth expandable member that is proximal to a *Lougu* acupressure point of the lower limb when the lower limb is housed in the tubular portion, wherein the first section of the eighth expandable member is configured to purposively expand more than at least one other section of the eighth expandable member that surround the first section of the eighth expandable member in such a way as to purposively apply more targeted pressure to the *Zhubin* acupressure point, wherein the second section of the eighth expandable member is configured to purposively expand more than at least one other section of the eighth expandable member that surround the second section of the eighth

expandable member in such a way as to purposively apply more targeted pressure to the *Chengshan* acupressure point, wherein the third section of the eighth expandable member is configured to purposively expand more than at least one other section of the eighth expandable member that surround the third section of the eighth expandable member in such a way as to purposively apply more targeted pressure to the *Lougu* acupressure point;

first and second protruding members extending radially away from a common axis and configurable to rotate around the common axis, the common axis being an axis perpendicular to a line drawn between the second end section of the elongated portion and the corner section of the corner portion, wherein the first and second protruding members are configured to point in different directions, wherein the first and second protruding members are positionable below at least a portion of the rear bottom wall of the corner portion, wherein each of the first and second protruding members are rotatable relative to the common axis in such a way as to switch between protruding towards the interior of the corner portion and not protruding towards the interior of the corner portion, wherein when the corner portion houses the foot, each of the first and second protruding members are configurable to control an amount of pressure applied to a bottom of the foot by controlling the rotation of the protruding member around the common axis, wherein each of the first and second protruding members are configurable to apply a first maximum pressure to the bottom of the foot when the protruding member is rotated to a maximum position;

wherein the second expandable member and each of the first and second protruding members are configurable to cooperate to apply a gradually increasing pressure to the bottom of the foot up to a second maximum pressure by expanding the second expandable member towards the interior of the corner portion of the main housing and rotating each of the first and second protruding members to the maximum position, wherein the second maximum pressure is greater than the first maximum pressure.

2. The lower limb massage system of claim 1, wherein the lower left side wall, lower right side wall, rear top wall, and rear bottom wall are in communication with the upper left side wall, upper right side wall, front top wall, and front bottom wall, respectively.

3. The lower limb massage system of claim 1, wherein:

the first expandable member comprises a first input port, and the first expandable member is configurable to expand towards the interior of the elongated portion upon an application of a positive pressure via the first input port; and

the second expandable member comprises a second input port, and the second expandable member is configurable to expand towards the interior of the corner portion upon an application of a positive pressure via the second input port.

4. The lower limb massage system of claim 1, wherein when a lower limb is inserted into the main housing, the first end section is configurable to house at least a calf portion of the lower limb, the second end section is configurable to house at least a toe portion of the lower limb, and the corner portion is configurable to house at least an ankle and heel portion of the lower limb.

5. The lower limb massage system of claim 1, wherein one or more of the following apply:

the third expandable member includes a substantially L-shaped body;

the fourth expandable member includes a substantially L-shaped body;

the fifth expandable member includes a substantially L-shaped body;

the sixth expandable member includes a substantially tetragonal shaped body;

the seventh expandable member includes a substantially tetragonal shaped body;

the eighth expandable member includes a substantially tetragonal shaped body;

the fourth expandable member and fifth expandable member are adjacently positioned in such a way that the collective shape of the fourth expandable member and fifth expandable member resembles a tetragon;

the fourth expandable member and fifth expandable member are adjacently positioned in such a way that the collective shape of the fourth expandable member and fifth expandable member resembles the shape of the eighth expandable member;

the sixth expandable member and seventh expandable member are adjacently positioned in such a way that the collective shape of the sixth expandable member and seventh expandable member resembles an L-shape; and/or

the sixth expandable member and seventh expandable member are adjacently positioned in such a way that the collective shape of the sixth expandable member and seventh expandable member resembles the shape of the third expandable member.

6. The lower limb massage system of claim 1, wherein one or more of the following apply:

the first expandable member includes a substantially trapezoidal shaped body;

the second expandable member includes a substantially hexagonal shaped body; and/or

the first expandable member and second expandable member are positioned in such a way that at least a portion of the first expandable member is adjacent to the second expandable member and the first expandable member is positioned between the second end section and the second expandable member.

7. The lower limb massage system of claim 1, further comprising one or more positive pressure sources operable to provide positive pressure to one or more of the expandable members.

8. The lower limb massage system of claim 1, wherein one or more of the expandable members are independently expandable.

9. The lower limb massage system of claim 1, wherein one or more of the following apply:

the positive pressure applied to the first expandable member is selectively controllable so as to control the expansion of the first expandable member towards the interior of the elongated portion;

the positive pressure applied to the second expandable member is selectively controllable so as to control the expansion of the second expandable member towards the interior of the corner portion;

the positive pressure applied to the third expandable member is selectively controllable so as to control the expansion of the third expandable member towards the interior of the corner portion;

the positive pressure applied to the fourth expandable member is selectively controllable so as to control the expansion of the fourth expandable member towards the interior of the tubular portion;

the positive pressure applied to the fifth expandable member is selectively controllable so as to control the expansion of the fifth expandable member towards the interior of the tubular portion;

the positive pressure applied to the sixth expandable member is selectively controllable so as to control the expansion of the sixth expandable member towards the interior of the corner portion;

the positive pressure applied to the seventh expandable member is selectively controllable so as to control the expansion of the seventh expandable member towards the interior of the corner portion; and

the positive pressure applied to the eighth expandable member is selectively controllable so as to control the expansion of the eighth expandable member towards the interior of the tubular portion.

10. The lower limb massage system of claim 1, further comprising:

one or more third protruding members configurable to contact with the front bottom wall, the one or more third protruding members proximal to the second end section and actuatable so as to protrude towards the interior of the elongated portion; and

one or more fourth protruding members configurable to contact with the rear bottom wall, the one or more fourth protruding members proximal to a bend section of the corner portion and actuatable so as to protrude towards the interior of the corner portion;

wherein the first expandable member and the one or more first protruding members are configurable to cooperate to apply a pressure on at least a portion of the bottom of the foot proximal to the toe portion of the lower limb, including a *Lineiting* acupressure point;

wherein the one or more second protruding members are configurable to apply a pressure on at least a heel portion of the foot, including a *Shimian* acupressure point;

wherein the second expandable member and the one or more third protruding members are configurable to cooperate to apply a pressure on a *Yongquan* acupressure point.

11. A processing system for controlling the lower limb massage system of claim 1, the processing system comprising:

a processor, the processor configurable to:

rotate the one or more protruding members to protrude towards the interior of the main housing;

apply a gradually increasing positive pressure into the second expandable member;

rotate, while the positive pressure is being applied, the one or more protruding members in a first direction for a first period of time;

stop rotation, while the positive pressure is being applied, of the one or more protruding members for a second period of time;

rotate, while the positive pressure is being applied, the one or more protruding members in a second direction opposite to the first direction for a third period of time; and

stop rotation, while the positive pressure is being applied, of the one or more protruding members for a fourth period of time.

12. The processing system of claim 11, wherein the processor is configurable to:

actuate the one or more second protruding members to protrude towards the interior of the main housing;

actuate the one or more third protruding members to protrude towards the interior of the main housing; and

apply a gradually increasing positive pressure into the first expandable member.

13. The processing system of claim 11, wherein the processor is configurable to cooperatively rotate the one or more protruding members and expand the second expandable member and/or first expandable member in such a way as to apply pressure to one or more acupressure points, including a *Yongquan* acupressure point.

14. The processing system of claim 11, wherein the processor is configurable to repeat the actions.

15. The processing system of claim 11, wherein one or more of the following apply:

the first direction is a clock-wise direction;

the first period of time is between about 0.1-5 seconds;

the second period of time is between about 0.1-5 seconds;

the third period of time is between about 0.1-5 seconds; and/or

the fourth period of time is between about 0.1-5 seconds.

16. The processing system of claim 11, wherein one or more of the following apply:

the first direction is a clock-wise direction;

the first period of time is between about 0.1-0.9 seconds;

the second period of time is between about 0.2-0.8 seconds;

the third period of time is between about 0.2-0.9 seconds; and/or

the fourth period of time is between about 0.2-0.8 seconds.