CLAIMS

1. A gait balance rehabilitation apparatus, comprising:

a base;

a frame, the frame being fixedly disposed on the base, the frame extending from the base for a length along a longitudinal direction;

a slidable member, the slidable member being slidably engaged with the frame, the slidable member being displaceable relative to the frame in the longitudinal direction or in a counter-longitudinal direction opposing the longitudinal direction;

a seat, the seat having a first end pivotably coupled with the slidable member, wherein the seat includes a mid-section pivotably coupled with the frame;

a braking mechanism, the braking mechanism including a plurality of linkages and a corresponding plurality of rotary joints, the slidable member serving as one of the plurality of linkages; and

a handle system coupled to the braking mechanism, the handle system being configured to move laterally relative to the frame via the braking mechanism, wherein the braking mechanism is configured to arrest movement of the handle system.

2. The gait balance rehabilitation apparatus as recited in claim 1, wherein the plurality of linkages and the corresponding plurality of rotary joints being alternately coupled to one another and forming a closed ring structure, and the handle system being slidingly coupled to the frame via the braking mechanism.

3. The gait balance rehabilitation apparatus as recited in any one of claim 1 or claim 2, characterized in the seat is rotatable in a direction of rotation, the direction of rotation being dependent on a displacement of the slidable member relative to the frame.

4. The gait balance rehabilitation apparatus as recited in any one of claims 1 to 3, characterized in that a first displacement of the slidable member in the longitudinal direction enables the seat to rotatably fold.

5. The gait balance rehabilitation apparatus as recited in any one of claims 1 to 4, characterized in that a second displacement of the slidable member in the counter-longitudinal direction enables the seat to rotatably unfold.

6. The gait balance rehabilitation apparatus as recited in any one of claims 1 to 5, characterized in that the gait balance rehabilitation apparatus is convertible from an unfolded-seat mode to a folded-seat mode in response to the slidable member being displaced in the longitudinal direction.

7. The gait balance rehabilitation apparatus as recited in any one of claims 1 to 5, characterized in that the gait balance rehabilitation apparatus is convertible from a folded-seat mode to an unfolded-seat mode in response to the slidable member being displaced in the counter-longitudinal direction.

8. The gait balance rehabilitation apparatus as recited in claim 6 or claim 7, wherein the folded-seat mode is characterized by the longitudinal direction being parallel to a first plane defined by the seat being fully folded.

9. The gait balance rehabilitation apparatus as recited in any one of claims 6 to 8, wherein the unfolded-seat mode is characterized by the longitudinal direction being normal to a second plane defined by the seat being fully unfolded.

10. The gait balance rehabilitation apparatus as recited in any one of claims 2 to 9, further comprising:

a slide groove component, the slide groove component forming a part of the frame, the slide groove component defining a groove, the groove extending along the longitudinal direction; and

a swivel element, a first end of the swivel element being in slidable engagement with the groove, a second end of the swivel element being pivotably coupled with a mid-section of the seat, the first end being confined to displace along the groove,

wherein a rear section of the seat is pivotably coupled with the slidable member.

11. The gait balance rehabilitation apparatus as recited in any one of claims 2 to 10,

wherein the handle system displacing in the longitudinal direction causes the slidable member to move in a longitudinal direction relative to the frame and causes the seat to rotatably fold, and

wherein the handle system displacing in the counter-longitudinal direction causes the slidable member to move in the counter-longitudinal direction relative to the frame and causes the seat to rotatably unfold.

12. The gait balance rehabilitation apparatus as recited in claim 10 or claim 11, characterized in that the handle system is configured to be manually displaceable to enable the slidable member to slide relative to the frame alternately in the longitudinal direction or the counter-longitudinal direction.

13. The gait balance rehabilitation apparatus as recited in any one of claims 10 to 12, further comprising a driving mechanism, the driving mechanism being coupled to the slidable member and configured to drive the slidable member to slide relative to the frame.

14. The gait balance rehabilitation apparatus as recited in any one of claims 2 to 13, wherein the braking mechanism comprises six rotary joints and six linkages, the six rotary joints and the six linkages being alternately coupled with one another to form a closed ring structure, wherein four of the six rotary joints are lockable joints.

15. The gait balance rehabilitation apparatus according to claim 14, wherein each one of the lockable rotary joints is configured to lock an angular displacement between two of the six linkages coupled to the respective one of the lockable joints in response to a signal received from a sensor.

16. The gait balance rehabilitation apparatus as recited in claim 14, further comprising: a connecting member, the connecting member serving as one of the linkages other than the slidable member, wherein the connecting member extends to the handle system and is coupleable with a safety harness.

17. The gait balance rehabilitation apparatus as recited in any one of claims 2 to 16, further comprising:

a first base element, the first base element extending in a first axial direction; and

a second base element, the second base element extending in a second axial direction, the first base element and the second base element extending from different ends of the base,

wherein the first base element and the second base element are each pivotably coupled to the base to define an adjustable footprint area therebetween.

18. The gait balance rehabilitation apparatus as recited in claim 17, further comprising:

a first front wheel, the first front wheel being coupled to the first base element;

a second front wheel, the second front wheel being coupled to the second base element; and

two rear wheels, two rear wheels being coupled to the base, wherein the first front wheel, the second front wheel, and the two rear wheels form a rear wheel drive chassis.

19. The gait balance rehabilitation apparatus as recited in claim 17 or claim 18, further comprising:

a first footrest, the first footrest being pivotably coupled to the first base element, the first footrest being configured to be rotatably folded relative to the first base element; and

a second footrest, the second footrest being pivotably coupled to the second base element, the second footrest being configured to be rotatably folded relative to second base element.

20. The gait balance rehabilitation apparatus as recited in any one of claims 2 to 19, further comprising:

a support member, a proximal end of the support member being coupled to one of the plurality of linkages other than the slidable member, the support member being cantilevered from the proximal end in a forward direction perpendicular to the longitudinal direction; and

a connector, the connector being disposed at a distal end of the support member, wherein the connector is releasably coupleable with an exoskeleton device.