CLAIMS

WHAT IS CLAIMED IS:

1. A resistance system for an exercise apparatus having a frame and a flywheel, the resistance system comprising:

a first resistance apparatus comprising

an adjusting bracket,

at least two magnetic members mounted on an inner surface of the adjusting bracket;

an actuator having an adjusting shaft, the adjusting shaft having a first end pivotably attached to the frame, and wherein the actuator is operable to traverse a portion of the adjusting shaft, and wherein at a first position, the two magnetic members are disposed above the flywheel, and wherein in a second position, the two magnetic members are disposed on opposite sides of the flywheel, providing resistance thereto; and

a load cell coupling the adjusting bracket on a first end to the frame and mounted to a mounting bracket on a second end, the mounting bracket pivotally mounted to the frame and, the load cell generating a signal corresponding to movement of the adjusting bracket.

2. The resistance system of claim 1 further comprising:

a second resistance apparatus comprising:

a brake pad assembly comprising a brake pad; and

an activation apparatus operable to bias the brake pad against the flywheel, providing resistance thereto.

3. The resistance system of claim 1 further comprising:

a user adjusting shaft operable to rotate on a primary axis; and

a brake encoder operable to sense a rotation of the user adjusting shaft.

4. The resistance system of claim 3 further comprising:

control components operable to control operation of the resistance system; and

wherein a signal representing the sensed rotation is received by the control components.

5. The resistance system of claim 4 wherein the sensed rotation is processed by the control components and wherein the control components are operable to generate corresponding instructions to the actuator to move along the adjusting shaft in accordance therewith.

6. The resistance system of claim 1 wherein the two magnet members apply the resistance to the flywheel when the adjusting bracket is in a lowered position.

7. The resistance system of claim 1 further comprising a brake pad assembly and a brake pad disposed thereon, and wherein the adjusting shaft is operable to bias the brake pad assembly towards the flywheel such that the brake pad is in contact with the flywheel.

8. The resistance system of claim 1 further comprising a knob disposed at an end of the adjusting shaft and facilitating manual rotation of the adjustment shaft.

9. The resistance system of claim 1, wherein the mounting bracket is pivotably connected to the frame.

10. The resistance system of claim 1 further comprising a memory storing a fixed mapping of cadence and power, a dynamic mapping of position to resistance, and an error mapping; wherein the resistance system further comprises a logic device configured to calculate an error in resistance values and update the dynamic mapping of a position to resistance to compensate for the error.

11. A method of adjusting resistance in an exercise apparatus having a frame and a flywheel, the method comprising:

sensing a rotation of an adjustment shaft;

receiving the sensed rotation at control components;

generating a signal to drive an actuator, the actuator operable to vary resistance applied to the flywheel;

operating the actuator in response to the signal to drive resistance components towards and/or away from the flywheel to vary the resistance applied to the flywheel; and

sensing, via load cell connected between resistance components and the frame, such that the loading cell is pivotably mounted on a mounting bracket connected to the frame.

12. The method of claim 11 further comprising:

manually rotating the adjustment shaft to adjust the resistance applied to the flywheel in response to the rotation.

13. The method of claim 11 further comprising disposing a pair of magnetic members on an inner surface of an adjusting bracket, the magnetic members spaced apart at a distance greater than a width of the flywheel.

14. The method of claim 13 wherein adjusting resistance further comprises adjusting the adjustment bracket creating magnetic flux between the pair of magnetic members disposed on opposite sides of the flywheel.

15. The method of claim 11 wherein adjusting resistance further comprises disposing a brake pad on an inner surface of an adjusting bracket and applying pressure from the adjustment shaft to the adjustment bracket to push the brake pad into the flywheel.

16. The method of claim 11 wherein adjusting the resistance further comprises manually turning a knob disposed at an end of the adjustment shaft.

17. The method of claim 11 further comprising determining a resistance value based at least in part on a position of the actuator.