CLAIMS

1. An infant care apparatus comprising:

a base;

a drive mechanism coupled to the base and having a first motion assembly and a second motion assembly, wherein the first motion assembly has a first motor dependent from the base and the second motion assembly has a second motor separate and distinct from the first motor;

a vibratory mechanism connected to the base and arranged so as to cooperate with the drive mechanism, the vibratory mechanism having a vibration motor separate and distinct from the first and second motors of the drive mechanism;

a movable stage movably mounted to the base and operatively coupled to the first motion assembly so that the first motor imparts, via the first motion assembly, a first cyclic motion in a first direction to the movable stage, and to the second motion assembly so that the second motor imparts, via the second motion assembly, a second cyclic motion to at least part of the movable stage in a second direction independent of the first cyclic motion in the first direction imparted by the first motion assembly and to the vibratory mechanism so that the vibration motor vibrates the movable stage;

an infant support coupled to the movable stage so that the second cyclic motion and first cyclic motion is imparted to the infant support, and the infant support is configured to move cyclically in both the first direction and the second direction relative to the base; and

a controller communicably coupled to the drive mechanism, and configured so as to move the infant support in a selectably variable motion profile with selectable vibration modes selected, with the controller, from different selectably variable motion profiles and selectably different vibration modes for each of the different selectable variable motion profiles.

2. The infant care apparatus of claim 1, wherein the controller is configured to configured so as to move the infant support with separate impetus separately imparted on the infant support by the first cyclic motion and second cyclic motion respectively driven by the first and second motors, in both the first direction and the second direction with the selectably variable motion profile.

3. The infant care apparatus of claim 1, wherein the controller is configured to effect selection of the selectably variable motion profile by separate variance of motion characteristic of the separate respective first cyclic motion and second cyclic motion determined from a common selection input to the controller selecting the selectably variable motion profile

4. The infant care apparatus of claim 1, wherein at least part of the movable stage isolates the drive mechanism from the base.

5. The infant care apparatus of claim 1, wherein each of the different selectably variable motion profiles is deterministically defined by a selectably variable velocity characteristic of at least one of the first and second cyclic motions respectively of the first and second motion assemblies, and a selectably variable velocity characteristic of at least one of the first and second cyclic motions respectively of the first and second motion assemblies.

6. The infant care apparatus of claim 5, wherein the selectably variable velocity characteristic of at least one of the first and second cyclic motions respectively of the first and second motion assemblies, and the selectably variable velocity characteristic of at least one of the first and second cyclic motions respectively of the first and second motion assemblies are selected with the controller from the common selection input to the controller.

7. The infant care apparatus of claim 1, wherein each of the different selectably variable motion profiles includes at least one of horizontal and vertical movements.

8. The infant care apparatus of claim 1, wherein the first motion assembly comprises:

the first motor having a drive shaft; and

a slide crank assembly comprising a gearing assembly coupled to the drive shaft of the first motor and a crank member coupled to the gearing assembly and the movable stage;

wherein operation of the first motor causes rotation of the slide crank assembly, thereby imparting the first cyclic motion to the movable stage.

9. The infant care apparatus of claim 1, wherein the second motion assembly comprises:

the second motor having a drive shaft;

a worm gear assembly coupled to the output of the drive shaft; and

a vertical yoke having a first end coupled to an output shaft of the worm gear assembly,

wherein operation of the second motor causes rotation of the vertical yoke, thereby imparting second cyclic motion to the infant support.

10. The infant care apparatus of claim 9, wherein the second motion assembly further includes a dual scissor mechanism coupled to a second end of the vertical yoke configured to support the infant support.

11. The infant care apparatus of claim 1, wherein a first encoder having a single slot is coupled to a first drive shaft of the first motor and a second encoder having a single slot is coupled to a second drive shaft of the second motor.

12. The infant care apparatus of claim 11, wherein the controller determines position information of the infant support based at least in part on information from the first encoder and the second encoder.

13. A method comprising:

providing a base of an infant care apparatus;

providing a drive mechanism connected to the base, the drive mechanism having a first motion assembly and a second motion assembly, wherein the first motion assembly has a first motor dependent from the base and the second motion assembly has a second motor separate and distinct from the first motor;

providing a vibratory mechanism connected to the base and arranged so as to cooperate with the drive mechanism, the vibratory mechanism having a vibration motor separate and distinct from the first and second motors of the drive mechanism;

providing a movable stage movably mounted to the base and operatively coupled to the first motion assembly so that the first motor imparts, via the first motion assembly, a first cyclic motion in a first direction to the movable stage, and to the second motion assembly so that the second motor imparts, via the second motion assembly, a second cyclic motion to at least part of the movable stage in a second direction independent of the first cyclic motion in the first direction imparted by the first motion assembly and to the vibratory mechanism so that the vibration motor vibrates the movable stage;

providing an infant support coupled to the movable stage so that the second cyclic motion and first cyclic motion is imparted to the infant support, and the infant support is configured to move cyclically in both the first direction and the second direction relative to the base; and

moving, with a controller communicably coupled to the drive mechanism, the infant support in a selectably variable motion profile with selectable vibration modes selected, with the controller, from different selectably variable motion profiles and selectably different vibration modes for each of the different selectable variable motion profiles.

14. The method of claim 13, wherein a first encoder is coupled to a first drive shaft of the first motor and a second encoder is coupled to a second drive shaft of the second motor.

15. The method of claim 14, wherein the first encoder and the second encoder each include no more than one slot.

16. The method of claim 14, further comprising determining, with the controller, position information of the infant support based

at least in part on information from the first encoder and the second encoder.

17. The method of claim 13, wherein each of the different selectably variable motion profiles is predetermined, the method further comprising selecting, by a user, one of the selectably variable motion profiles.