ABSTRACT: A tiltable health table apparatus having a table which is rotatively mounted on a framework, with the table being connected to the framework at a point on the table which will produce an axis of rotation extending across the width of the table. The table has means for adjustably positioning an individual on the table surface, means for adjustably positioning the table and individual in a perpendicular direction from the plane of the table to the pivotal axis, and means for automatically supporting the ankles of an individual when said individual's feet are raised above his head.
3,568,669 TELTENG HEALTH TABLE

The present invention relates to a tiltable health table apparatus such as a balancing table or posture board and more particularly, to a tiltable which can be adjusted for balance to compensate for individual weight distribution and height variation. When the height and weight of an individual are adjusted, the center of gravity of the body and table coincide with the axis of rotation of the table thus enabling the table to be easily tilted. An individual can invert or change his position by changing his center of gravity with respect to the table by a slight movement of his hands such as lifting his arms above his head. When this is done the table can be tilted one way or another with the individual assuming the position of standing, lying horizontal or hanging inverted. In the primary use of the table an individual’s body is turned upside-down or inverted with the individual being supported by automatically adjusting feet or ankle supports.

Previous posture or health tables have been difficult to adjust because each individual differs as to his or her height and weight. This invention provides means for easily adjusting the table to compensate for the variable height and weight features of an individual so that the tilting health table could be used in a physician’s office, in the home or in a health or physical exercise room.

The invention enables an individual to vertically incline his body in an inverse position so that normal gravitational pull is reversed, causing an effect on the bone structure, spinal column, muscles, internal organs, and body fluids. The apparatus permits the body to hang free vertically, supported only by the ankles, so that the force of gravity pulls the body down with an equal tension stress in each leg enabling the spine to be stretched in a straight line. In addition to stimulating the circulatory system of the individual and stretching the spinal column, many physical and therapeutic benefits are achieved in the use of this invention.

The apparatus is economical to manufacture and is easily folded, stored, disassembled, or shipped as the individual owner or operator desires. The apparatus is rugged and sturdy in construction, but at the same time, contains parts which may be readily fabricated or replaced if needed. If desired, the apparatus can be locked in varying positions to increase its safety during use.

These and other objects and advantages of the invention will appear more clearly from the following specifications in connection with the accompanying drawings in which:

FIG. 1 is a perspective view of the apparatus as the operator positions himself onto the table;

FIG. 2 is a perspective view of the apparatus as shown in FIG. 1 with the table of the apparatus and operator being in a horizontal position;

FIG. 3 represents a fragmentary side view of the apparatus showing the height adjustment mechanism;

FIG. 4 represents a partial front view of the apparatus showing the automatic ankle adjusting mechanism;

FIG. 5 represents a partial side view of the apparatus showing the table and pivot axis connection and weight adjustment mechanism;

FIG. 6 shows a partial view of the apparatus disclosing a perspective side view of the automatic ankle adjusting mechanism;

FIG. 7 shows a cross section of the automatic ankle adjusting mechanism shown in FIGS. 4 and 6.

The novel apparatus disclosed is preferably formed of metal such as aluminum, or aluminum alloys which possess strength in a thin section to resist ordinary stresses. This type of structure is lightweight and can be fastened in a strong and permanent union. However, it is recognized that steel, alloy metals, or plastics may be used to good advantage and may be used in whole or in part in the novel structure.

FIGS. 1 and 2 show the preferred form of the assembled tilting table, characterized by a lightness in weight without loss of strength and can be fastened in a strong and permanent union. However, it is recognized that steel, alloy metals, or plastics may be used to good advantage and may be used in whole or in part in the novel structure.

As shown by FIG. 2 an A-type frame has legs 2 and 4 which are spaced and braced by support brace 8. The legs are tubular in shape with a preferred rectangular cross section. However, the cross section can be circular, triangular, or multangular, depending upon the process desired to manufacture the legs or the shape desired by the user. Legs 2 and 4 meet at the apex of the A-frame where they are connected with axle leg rack assembly 3. At the lower ends of the legs 2 and 4 are tips 6 which work as antislip elements preventing the slippage of the legs and marking or marring of floors or rags.

As shown in FIG. 2, support braces 8 run between legs 2 and 4 forming the bar of the A. Support braces 8 are tubular elements having a preferred rectangular cross section and are secured to legs 2 and 4. The support braces 8 are secured by fasteners 9 to the legs 2 and 4. The fasteners 9 can be a bracket device or an eye screw threaded or fastened to support brace 8. If desired, the support braces 8 can be welded to the legs or secured to the legs by bolts, screws, adhesives, or other suitable means. Legs 2 of the respective A-type frames are joined together by a plurality of cross braces 12 which connect and support the respective legs of the A-type frames. A plurality of cross braces 13 connect and brace support braces 8 of the A-type frames allowing for greater stability of the apparatus and thus increasing the safety of the apparatus.

Another cross brace 14 connects and supports legs 4 of respective A-type frames. If desired, a plurality of cross braces 14 can be utilized. The braces may be secured to the legs in any manner. They can be welded, adhesively connected, screwed or bolted as is desired. A plurality of circular-shaped hand rails 10 are provided, with one hand rail 10 being attached to each of the A-type frames. One end of hand rail 10 contacts leg 2, where it is secured to leg 2 by a fastening device 11. The other end of the hand rail is secured to axle leg rack assembly 3. Fastening device 11 is a bracket which fits around leg 2 and is secured to the hand rail 10 by suitable means. The hand rails are so placed that they extend forwardly and downwardly with respect to legs 2 so that they are within reach of the hands of the operator, so that he can pull himself back to a horizontal or normal position by a mere pressure placed upon the rails. The use of the hand rails 10 to pull the operator back up is optional as the individual can right himself by changing the center of gravity and causing the table to tilt back to a substantially vertical position.

In the axle leg rack assembly 3, the legs 2 and 4 are connected by a throughgoing bolt 7. The bolt 7 supports a rack 5 and also serves as the axis of rotation for table 1. To accommodate bolt 7 each leg can have a throughgoing hole in their tops or, as disclosed in the preferred embodiment, in their hollow head. The head may be formed integrally with the leg, or mounted on top of the legs by screwing, bolting, force fitting, welding, adhesives, or other suitable means. A carriage bolt 7 or other similar bolt-type structure is then placed through the holes in the legs maintaining the legs in an A-type frame position. A rack 5 is then fastened to the bolt 7, by welding, adhesive or other suitable means. If desired the rack 5 may be integrally made with an aperture or eye in one end so that the bolt 7 can be placed through the rack.

As shown by FIG. 5, the rack 5, is secured to bolt 7 in the axle leg rack assembly 3 of the A-type frame, with the rack being in cooperation with the weight adjustment mechanism 15. The weight adjustment mechanism 15 is used to raise or lower the rotating axis of the table 1 by moving the table to adjust for the varying weights of individuals using the table. The movement of the table will be in a direction perpendicular to the plane of the table. The weight adjustment mechanism 15 comprises a bracket 16 secured to table 1, a rotatable spur gear 18 rotatably secured on bracket 16, and means to turn the gear 18. A rack 5 is inserted through a guide or sleeve in bracket 16 where the rack is contacted by spur gear 18. The rack is correctly installed in the guide or sleeve of the bracket 16 when the teeth of the spur gear 18 mesh with the teeth of rack 5. The turning of the spur gear 18 is thus transmitted farther away from the axis of rotation, depending upon the direction the gear is turned. The gear 18 can be rotated by
physically turning a gear crank shaft assembly 17 or other suitable turning means. A locking thumb screw 20 is also pro-
vided to screw through an aperture in bracket 16 into rack 5 so that the means and adjustments are as desired in place. The
bracket can be provided with a tape measure 22 which is
secured to bracket 16 or, the rack 5 may be provided with a
similar tape measure so that a person's weight with relation to
the table's center of gravity can be recorded for future use by
a given number. Thereafter, the tilting health table can be
preset so that when the individual comes into the room for ex-
cercising there, no adjustments are necessary.

The parts of axle leg rack assemblies 3 and weight adjust-
ment mechanisms 15 are preferably made of steel because the
parts encounter high stress relationships. However, other
suitable materials having comparable strength and stress
characteristics can be used.

The table 1 is constructed of rectangular tubing, in two sec-
tions, with the sections being hinged together. The sections
are fastened together by the use of a locking thumb screw or,
the table can be of single piece construction. The table 1 can
be made either solid or hollow; of aluminum, steel, plastic,
wood, nylon, plexiglass or other suitable substances. The top
of the table is preferably covered with foam rubber or a
cushioning material with the table and cushioning material
being covered by leather, fiber, synthetic material or other
suitable substances.

A table adjustment for an individual's height can be made
while the person is on the table or off the table by means of a
height adjustment mechanism 19. The height adjustment
mechanism is a sprocket and chain arrangement which moves
a foot support 70 longitudinally on table 1. This is done simply
by rotating a hand wheel 24 which is connected to and turns a
sprocket driving the chain arrangement which pulls foot sup-
port 70. The hand wheel 24 has a circumferential handle grip
preferably made of rubber although any suitable material
can be used. The body of the wheel has a plurality of equally
spaced apertures therethrough so that a locking thumb screw
21 can be used to lock the height adjustment mechanism 19 to
the table in the desired adjustment. The turning of hand wheel
24 rotates sprocket 23 which pulls a link chain or other suita-
able chain 26. The pulling action of chain 26 turns a second
sprocket 25 located at the base of the table. Sprockets 23 and
25 are rotatably fastened to brackets which are fastened to the
sides of the table. If desired, the sprockets can be rotatably
fastened to the sides of the table with a suitable guard being
placed around the sprockets and chain assembly. The ends
of the chain are fastened to a plurality of adjustable eye screws
28 which are secured to foot base projection 70, a projection
of foot support 70, which projects perpendicularly from the
plane of table 1. If desired, the ends of the chain can be
fastened to a turnbuckle secured to foot base projection 27.
The chain 26 may be tightened or loosened by turning the ad-
justable eye screws 28 so that easy maintenance of the chain
can be affected. Foot support brackets can be used to support
and strengthen the foot support 70. Once the desired adjust-
ment has been reached, a locking thumb screw 21 can be placed
in one of the spaced apertures in the hand wheel 24 to
lock it in place; causing the foot support 70 to be locked into
a desired position. For the convenience of the operator using
the apparatus, a measuring tape 32 is fastened along the side
of the table 1 or on the top of the table so that the height rela-
tionship of the person can quickly be determined and the ap-
paratus can be preset before the person mounts the table. The
measuring tape 32 can be placed on a tape guard securely
to the side of the table or placed directly on top of the table. In
this way a person can always have a set height number so that
the apparatus can be preset for an individual's height center
of gravity for the table.

Attached to the foot support 70 is an automatically adjusta-
ble ankle support holding mechanism 34 which comprises a plurality of arcuate ankle clamps 34 and 36 which are contour shaped to fit an in-
dividual's ankles. A pair of clamps consisting of a rear ankle
clamp 34 and a front ankle clamp 36 form one ankle support. The plurality of ankle clamps are adjusted spaceably, by using
a handle 38 to turn an adjusting screw 41. The handle 38 is
secured to adjusting screw 41. By turning the handle 38, the
therefore the steel adjusting screw 41, one can separate or
tighten the rear ankle clamps 34, without affecting elastic
bands or springs 42 which are secured to a rear spring bracket
52 and front spring bracket 46. The support foot 70 comprises
foot pressure base 44 which is hingedly connected to foot base
30. Secured to and extending upward from pressure base 44 is
extension base 45 which contains spring adjuster 43. The pres-
sure base extension 45 has a plurality of apertures in its body.
The spring adjuster 48 is operated by turning a wing nut or
other tightening mechanism 50. The tightening mechanism
50 is mounted on a threaded shaft 49 after one end of the shaft
has been inserted through an aperture in pressure base exten-
sion 45. The other end of shaft 49 is fixedly secured to front
spring bracket 46. By turning the tightening mechanism 50 on
threaded shaft 49, one can increase or decrease the elastic
band without changing the position of the rear ankle clamp
34. The front spring bracket 46 has elastic bands or springs 42
secured to it with the other ends of the bands or springs being
secured to a rear spring bracket 52. The tension of the elastic
bands or springs can be adjusted by turning the knob 53 on
the foot base 30 causing the foot base 30 and the pressure foot
base 44 to be forced together so that the rear ankle clamp 34
which is fitted onto the foot base 30 by a foot bracket 54
comes forward and snugly secures the rear section of the an-
kle. The front ankle clamp 36 is forced backward and snugly
secures the front section of the ankle and instep of the foot.
The ankle clamps 34 and 36 are fastened to the ankle supports
in the back and the instep in the front. Each ankle clamp is
pivoted on its respective bracket by bolt 56, which loosely
holds the ankle clamp in position so that it can rock back and
forth. This rocking movement allows the ankle clamps to
close position and fit the contours of the foot. The ankle
clamps can be opened by pushing the front of the foot or the
shoe on the foot pressure base 44 and forcing the foot pressure
base forward so that the springs or elastic bands 42 are ex-
tended. The foot pressure base 44 can move because it is hin-
gedly connected at 58 to the foot base 30. The hinge 58 can be
a standard hinge as shown in FIG. 6 or it may be a butt hinge
so that there is clearance in the closed position. If desired a
spring strip bolt or spring means may be used to limit the
distance the pressure foot base 44 can move. The ankle clamps
can be bolted or screwed to the respective foot base 30 and
pressure foot base 44. If desired, the hinge ends can be
welded, riveted or adhesively attached to the foot base 30 and
pressure foot base 44. In extracting the feet from the auto-
matically adjustable ankle support holding mechanism 31, one
leg is extracted from the ankle clamps 34 and 36 after pressure
is placed on foot pressure base 44. The free leg is then placed
on the foot pressure base 44 and pressure is again applied
which parts the ankle clamps and enables the other leg to be
extracted from the ankle clamps. The foot pressure is then
released and the ankle clamps 34 and 36 are pulled by the
spring or elastic band contract back into normal positions.

The ankle size adjustment operates in the following manner.
A steel adjusting screw 41 is threaded through apertures
in a U-shaped bracket 40 into an aperture in front ankle
clamp bracket 60 so that the front ankle bracket can rotate on
the adjusting screw 41. The adjusting screw 41 is rotatably
secured on one end of U-shaped bracket 40. The front ankle
clamps 36 are pivotally connected to bracket 40. By turning the handle 48 rigidly to each other thus enabling the clamps to automatically
shift to produce equal pressure at all contact points on the
ankles and feet. This will compensate for one leg being at least
one inch different in length than the other leg. The front
foot clamp bracket 60 can also rotate on its own axis in the bearing
at spacer 62 and will therefore compensate for one ankle
being at least two inches longer in circumference than the
other. The contoured ankle clamps are pivoted at their sup-
port points 56 which are so placed that the clamps will auto-
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matically adjust to accommodate the shape of the ankle and foot.

Although the present invention has been described and illustrated in connection with various embodiments it is to be understood that modifications and variations may be resorted to without departing from the spirit of the invention as those skilled in this art will readily understand. Such modifications and variations are considered to be within the purview and scope of the present invention as defined by the appended claims.

1 claim:

1. A tilting health table apparatus comprising in combination a framework, said framework being provided with means for rotatably mounting a table thereon, said table being connected to said framework at a point on said table which will produce an axis of rotation extending across the width of said table, means for adjustably positioning said foot support in a longitudinal direction, said foot support having automatically adjusting ankle holding means for supporting the ankles of an individual on said table, and said automatically adjustable ankle holding means comprising a plurality of ankle clamps, means to connect said ankle clamps to said foot support, an extension secured to said foot support and extending from said foot support, a spring adjustment means adjustably mounted to said extension, a bracket secured to said foot support, elastic means connecting said spring adjustment means and said bracket, and means to spaceably adjust said ankle clamps.

2. The tilting health table apparatus as claimed in claim 1 wherein said spring adjustment means comprises a spring bracket, a threaded shaft, one end of said threaded shaft secured to said spring bracket, the other end of said threaded shaft extending through an aperture in said extension and a nut mounted on said other end of said threaded shaft.

3. The tilting health table apparatus as claimed in claim 1 wherein said ankle clamp spacing means comprises a front ankle clamp, said ankle clamp being mounted on a clamp bracket, said clamp bracket having an aperture thereon, an adjusting screw, said adjusting screw extending through an aperture in said clamp bracket, and a handle connected to said adjusting screw.

4. A tilting health table apparatus comprising in combination a framework, a table having means for rotatably connecting said table to said framework, said framework and said table being connected at a point on said table which will produce an axis of rotation extending across the width of said table, an automatically adjustable ankle holding means for supporting the ankles of an individual on said table comprising a plurality of ankle clamps, means to connect said ankle clamps to a foot support, an extension secured to said foot support and extending from said foot support, a spring adjustment means adjustably mounted to said extension, a bracket secured to said foot support, elastic means connecting said spring adjustment means and said bracket, and means to spaceably adjust said ankle clamps.