ABSTRACT

A novel balance exercise apparatus and method of training is disclosed which includes a spanning system which spans between two positions in space and supports a suspended system which is suspended between the two positions in space. A user trains their balance skills and exercises by positioning all or part of their body on the suspended system and then moves their body to maintain their balance while remaining in place or doing exercises. The suspended system creates a dynamic balance environment where the suspended system may move such as swing, bend, rotate, or twist, all controlled by the balance and movement of the user. The suspended system may consist of rigid and/or flexible devices that are supported by the spanning system above the ground. In addition, the spanning system and the suspended system may include devices to vary the nature and difficulty of the dynamic balance environment. The dynamic balance environment may range from stiff to very soft and incorporate variable spring and bounce properties. The dynamic nature of the balance environment makes this system a very effective and challenging balance training system.
BALANCE TRAINING AND EXERCISE DEVICE AND METHOD

FIELD OF THE INVENTION

The present invention is related to balance training and exercise.

CROSS REFERENCE TO RELATED APPLICATIONS

Not applicable

FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not applicable

SEQUENCE OR COMPUTER PROGRAM LISTING

Not applicable

BACKGROUND OF THE INVENTION

Balance training exercise equipment has become popular and is used by a multitude of people for many different purposes. Some of these purposes include development of improved balance for sports, rehabilitation to regain loss of balance from sickness or injury, and general exercise.

There exists a large collection of equipment for balance training and balance exercises. The present invention relates to whole body balance and balance exercise.

Hakon lie of Oslo Norway in U.S. Pat. No. 4,509,743 dated Apr. 9, 1985 discloses a solid plate you stand on supported by a plurality of springs under it. The springs circle the underside of the plate so it can tilt in all directions. A drive motor is also included to cause the plate to tilt irregularly around the center post.

Robert Watson of Kansas City, Kans. in U.S. Pat. No. 4,787,630 dated Nov. 29, 1988 discloses a solid platform to stand on similar to Hakon Lie’s platform but Watson’s platform also rotates. Watson also discloses the use of ropes, springs, and elastic cords for arm exercises while standing, sitting, kneeling, or laying on the solid platform for balance and upper body exercise.

Jeremy T. Butler of Paradise Utah in U.S. Pat. No. D507,315 dated Jul. 12, 2005 discloses an inflated device which is an elongated half a ball, as well as many other inflated balance balls designs, where the user positions their body on the inflated domed surface of the ball.

Jerry M. McShane of Deer Park Tex. in U.S. Pat. No. 5,613,690 dated Mar. 25, 1997 discloses the combination of solid balance board with springs and ball. In addition he discloses linking the system to a personal computer to monitor and provide angular feedback.

David Homyonfer of Holon Israel in U.S. Pat. No. 5,755,651 dated May 26, 1998 discloses a solid platform which is a plate with a pivot, like a see-saw with an energy-absorbing element at both ends.

Anthony B. Carey of San Diego, Calif. in U.S. Pat. No. 6,176,817B1 dated Jan. 23, 2001 discloses a dish-shaped rotary solid platform where the resistance to motion can be adjusted and there is a handrail for support.

Alexander Nestoiter of Las Angeles Calif. discloses a rubber three-sided balance beam which sits on the floor and has concave sides. The three corners each have a curved top to walk on, with different radii.

Josef Theunissen of Kerpen, Denmark in U.S. Pat. No. 6,461,285 dated Oct. 8, 2002 discloses a balance training device which has a clear solid platform on top of a half dome, inside the dome is a maze with a ball in it. You tilt the dome with your body to move the ball through the maze.

Louis Stack of Cagary, Calif. in U.S. Pat. No. 6,616,583 B1 dated September 2003 disclosed an elongated solid platform in the shape of a skateboard where there are rubber support like springs at either end.

William Lin of Taichung, Taiwan in U.S. Pat. No. 6,872,175 B2 Dated Mar. 29, 2005 discloses a solid platform connected to an inflated ball where part of the ball passes through the platform.

Reginald A. Johnson of Meridian, MS in U.S. Pat. No. 6,929,589 B2 dated Aug. 16, 2005 discloses a balance and gait training board which fits inside existing parallel bar systems with flip tip hurdles and interval markings and a beam that can be put on the floor between the parallel bars.

Michael Kemery of Portland, Oreg. in U.S. Pat. No. 6,954,920 dated Sep. 20, 2005 discloses a solid balancing platform with a slide apart pivoting dome so that it can pivot in the center on one point or two points if the dome is slid apart.

Hiroyuki Hojo of Hikone, Japan in U.S. Pat. No. 7,070,415 B2 dated Jul. 4, 2006 discloses a horse-riding like seated device which is motorized and moves to cause the user to reposition their center of gravity.

R. Joel Loane of Park City Utah in U.S. Pat. No. 7,090,621 B2 dated Aug. 15, 2006 discloses a training device with two rails that a solid carriage rolls on. The rails are curved upwards in the center such that some one standing on the solid platform exercises by making the carriage roll over the hump from one side to the other.

William T. Dalebout of Lohan Utah in U.S. Pat. No. 7,112,168 B2 dated Sep. 26, 2006 discloses a tilting solid platform where the resistance to tilting can be changed. There is a flexible center pivot between the platform and base which has a selectable amount of blockage to movement.

Marc S. Gottlieb of Raleigh N.C. in U.S. Pat. No. 7,137,938 B2 discloses a solid platform with a spherical bottom where the height of the sphere can be adjusted, to change the difficulty of balancing on the platform.

There are many devices for balance training and exercise like those described above. All these devices have the user stand on a solid or inflated platform. Both feet can be used to stand on a platform to help to stabilize the user. They all require that the user use their upper body to balance with their legs and feet acting together to balance or move the platform.

What is missing is a device which requires complete control of the body and the separate movement of right and left arms and legs to maintain balance and to exercise. Such a device would require more skill. What is needed is a device that does not provide a stable solid or inflated platform to place the body on, a device and exercise system that would...
require complete concentration and control of every part of the body independent of the other parts so that the whole body is engaged to balance.

SUMMARY OF THE INVENTION

[0025] The object of the present invention is to provide an alternative and more difficult balance training and exercise device which does not use a solid or inflated platform. The disclosed invention is not based on balancing on a half sphere or a tilting solid plane and is more difficult and requires more skill. As a result, the present invention is a more effective balance training tool and a more effective exercise tool for the whole body. The present invention is based on the most difficult balancing activity: tight rope walking and slack line walking. Tight ropes and slack lines are connected at either end to solid objects connected to or planted into the ground. Normally ropes or chains are used and are connected to a building or poles cemented into the ground, such that they are fixed, not adjustable, not portable, and often too dangerous to be used by most people for balance training and exercise.

[0026] The present invention relates to exercise equipment and more particularly to balance training and exercise equipment that provide an unstable environment for the user to balance on and where the amount of instability can be changed to meet the training and exercise needs of the user.

[0027] The present invention provides a balance environment suspended between two locations or points in space. The two or more points or locations in space are created by a spanning system. The created points in space hold the suspension environment above the ground.

[0028] The user places part or all of their body on the suspension device of the environment which provides an unstable environment for the user. The user then trains or exercises by trying to maintain their position on the suspension device. Alternatively the user trains or exercises by trying to move their position relative to the suspension device. For example the user tries to stand, walk or do exercise on the suspended environment.

[0029] The unstable environment of the present invention causes the user to move or tighten the muscles on different parts of the body to maintain balance and remain their position on the suspension device during static or dynamic training and/or exercise.

[0030] The unstable environment may be adjusted or modified to correspond to the balancing ability of the user. For example in one embodiment the flexibility and movement of the unstable environment may be reduced or increased.

[0031] The unstable environment design may also be modified. For example, the width of the suspension device that the user has to maintain balance upon may be increased or decreased to correspond to the training exercise desired and/or ability of the user.

[0032] The suspension device may be a rope, strap, or band or a flexible, semi-solid, or solid member supported in whole or in part by a flexible connection such as a rope, strap, band, hook, or pivot.

[0033] The spanning device of the spanning system may also be of an adjustable design such that the suspension points themselves are dynamic and their movement can be changed or modified.

[0034] The spanning device of the spanning system may fold or come apart for easy transportation. The spanning device may be a rigid or semi-rigid structure, or adjust between flexible and rigid.

[0035] The present invention may include an adjuster which can change the tension of the suspension device such that it flexes more or less under the user's load. The unstable environment has been designed to be within a safe distance from the floor and less than one step in height, but heights below 1 inch to above 36 inches may be used. Different environments with different types and amounts of instability may be connected to the spanning system and may be used alone or connected together to provide different training experiences such as tight rope, stack line, swings, bared rolls, or suspended beams may be used alone or in combination.

[0036] In addition, additional devices may be connected to or used by the user while on the unstable environment to assist in balance, training, and or exercise.

[0037] Also more than one unstable environment may be used at the same time by one user. The additional unstable environment may have the same or different characteristics.

[0038] The present invention provides a portable balance device which does not need to be connected to the ground.

[0039] Additional details, features, and advantages of the present invention will be set forth in the description which follows, and will be made obvious from the description and the use of the present invention. Advantages and features of the invention may be obtained and realized by parts and combinations particularly pointed out in the appended claims. These and other features of the present invention will become more fully apparent from the following description and appended claims, or may be learned by the practice of the present invention as set forth herein.

[0040] In addition a method for using the present invention will be set forth in the description which follows. The advantages and features of the method may be realized through the description and appended claims and may also be obtained by the practice of the method for the present invention as set forth herein.

BRIEF DESCRIPTION OF THE DRAWINGS

[0041] In order to describe the manner in which the above-recited and other advantages, method, and features of the present invention can be obtained a more particular description of the invention will be rendered by reference to specific embodiments which are illustrated in the appended drawings. Understanding that these drawings depict only typical embodiments of the invention and are not therefore to be considered to be limiting in scope, the invention will be described and explained with additional specificity and detail through the use of the accompanying drawing in which:

[0042] FIG. 1 illustrates all exemplary embodiment of a suspension balance training device in accordance with the present invention and an individual user thereon;

[0043] FIG. 2 illustrates an exemplary embodiment wherein the suspension device includes a balance strap stretched between the connection location of the spanning system.

[0044] FIGS. 3A, 3B, & 3C illustrate an exemplary embodiment wherein the suspension system includes a balance strap and ratchet tighter, front, side and top views.

[0045] FIG. 4 illustrates an exemplary embodiment providing a detailed view of a user adjusting the tightness of the balance strap.

[0046] FIG. 5 illustrates an exemplary embodiment providing a detailed view of a user adjusting the height of the balance feet.
FIG. 6 illustrates an exemplary embodiment showing an alternative tightening mechanism wherein bolts can be used to adjust the tightness of the balance strap.

FIG. 7 illustrates an exemplary embodiment showing a cross section of the alternative tightening mechanism.

FIG. 8 illustrates an exemplary embodiment with a balance rope stretched between the connection points of the spanning system.

FIG. 9 illustrates an exemplary embodiment showing an alternative tightening mechanism using pivot points and a turn buckle.

FIG. 10 illustrates an exemplary embodiment with a turn buckle tighten and a tension spring.

FIG. 11 illustrates an exemplary embodiment showing an additional spanner support to reduce deflection and increase band stiffness.

FIG. 12 illustrates an exemplary embodiment showing a suspension beam with hooks on the end to connect to the spanning system.

FIG. 13 illustrates an exemplary embodiment showing a suspension beam with locking pins.

FIG. 14 illustrates an exemplary embodiment showing an alternative mechanism for keeping the suspension beam from coming off.

FIG. 15 illustrates an exemplary embodiment with a user balancing on the suspension beam.

FIG. 16 illustrates an exemplary embodiment with the user balancing on a suspension strap using balance poles to help balance.

FIG. 17 illustrates an exemplary embodiment where the user is balancing on one leg on a suspension strap.

FIG. 18 illustrates an exemplary embodiment where the user is balancing on one leg and is using their whole body to stabilize and maintain their balance.

FIG. 19 illustrates an exemplary embodiment where the user is maintaining balance while doing strength exercises.

FIG. 20 illustrates an exemplary embodiment where the user is maintaining balance while doing stretching exercises.

FIG. 21 illustrates an exemplary embodiment where the user is balancing on the balls of their feet.

FIG. 22 illustrates an exemplary embodiment where the user is doing stretching exercise standing near the suspension strap connection points for a less unstable environment.

FIG. 23 illustrates an exemplary embodiment wherein the user is using the strap as a spring similar to a trampoline.

FIG. 24 illustrates an exemplary embodiment wherein the user is using their arms on the suspension strap and supporting part of their body on the ground.

FIG. 25 illustrates an exemplary embodiment wherein the user is using the suspension strap to cushion and support the body for exercise.

FIG. 26 illustrates an exemplary embodiment wherein the user is using the spring affect to exercise the upper body.

FIG. 27 illustrates an exemplary embodiment wherein more than one suspension straps are supported by one spanner device.

FIG. 28 illustrates an exemplary embodiment wherein two separate spanning devices are connected together.

FIG. 29 illustrates an exemplary embodiment with a suspended platform that can swing from side to side.

FIG. 30 illustrates an exemplary embodiment with legs to separately adjust the height of both ends of the balance training system.

FIG. 31 illustrates an exemplary embodiment with a beam spanning system on one side and a suspended system on the other with legs that allow either side to be positioned on top.

FIG. 32 illustrates an exemplary embodiment which is hinged in the center and can fold.

DETAILED DESCRIPTION

The present invention extends to exercise and more particularly to exercise and balance training equipment that provides an environment which forces the user to work to maintain balance.

The following description of the present invention utilizes a series of diagrams that illustrate the structure of a number of exemplary embodiments for implementing the present invention. Using the diagrams in this manner to present the invention is for illustration purposes only and should not be construed as limiting the scope of the present invention.

Referring now to the drawings wherein, like reference numerals refer to similar or identical parts throughout several views. FIG. 1 shows an exemplary embodiment of the present invention with a balance training system: 10 on which a user 11 places all or part of their body. The balance training system 10 includes a spanning system 12 and a suspended system 14. The user 11 places all or part of the support for the user’s 11 body on the suspended system 14 and then tries to maintain their balance.

FIG. 1 discloses a balance training system 10 where the suspended system 14 is a support band system 15 suspended in space by the spanning system 12. The user 11 is shown standing with both feet on the support band system 15. In this embodiment of the present invention the support band system 15 is made of flexible webbing 16 such as nylon or polyester webbing, the same type of webbing used for seat belts and cargo straps. The webbing 16 deflects from the weight of the user 11 and twists with the slightest movement of the user 11. This unstable environment requires the user 11 to tighten the muscles of their body to counter act the instability. Unlike the solid balance platforms disclosed earlier there is no solid platform for the feet to move to maintain balance, instead the user 11 must make correction in their body position. Every part of the user’s 11 body must be controlled to gain and maintain a steady state position or move from one position to another. FIG. 1 discloses a spanning system 14 which includes a stability system 18 with an adjustment system 19. In this embodiment the stability system 18 consists of legs 13 connected to the spanning system 12. The legs 13 are angled outward like a sawhorse so that the ends of the support band system 15 are stable and can support the weight of the user 11. When weight is applied to the suspended system 14 the weight causes the spanning system 12 to bow, bend, and or twist so that all the feet 34 connect firmly with the ground. Preferably the spanning system 12 and stability system 18 are made of metal tubing such as steel or aluminum from less than one to greater than three inches in diameter; connected together with fasteners or by welding. In this embodiment, the spanning system 12 is a 1.5 inch diameter heavy wall steel tubing and is welded to the stability system.
18. The spanning system 12 is in the shape of a bow as used in archery and the suspended system 14 is similar to the string on a bow. When the string is pulled the bow bends and the bow acts as a spring and it quickly pulls the string back into position when the force on the string is reduced or removed. The spanning system 14 also bends and acts as an archery bow or spring loaded surface as on a trampoline. By changing the design of the spanning system 12 the stiffness, travel, and response of the spring action can be modified. The suspended system 14 is non-stretch such as a metal band, or stretchable and act as a spring itself.

[0078] The suspended system 14 design and rigidity will also affect the movement of the spanning system 12. The more the suspended system 14 is moved, stretched or bent by the weight, position, and movement of the user 11 the greater the bending force will be on the spanning system 12.

[0079] FIG. 2 shows the balance training system 10 including the support band system 15 wherein a tension adjuster 20 has a ratchet mechanism 22 for adjusting the tension of the support band system 15. In this embodiment the support band system 15 is supported between the suspension supports 24. The suspension supports 24 are connected to and held apart by the spanning system 12. This gives the suspension supports 24 a high level of stability.

[0080] FIG. 3A side, 3B top, and 3C end views show three views of the balance training system 10. FIG. 3A shows how the spanning system 12 is composed of a bow shaped bottom tube 30 which is supported off the floor 32 by the stability system 18. When a load is applied to the suspended system 14 such that the supports 24 are pulled inward and the spanning system 12 may bend. Preferably the spanning system 12 is high enough off the floor 32 that the spanning system 12 will not hit the floor 32. The reason the spanning system 12 is suspended off the floor 32 is so that the spanning system can move. If the spanning system 12 contacts the floor 32 when the user applies a load on the suspended system 14 this can cause the feet 34 to lift off the floor 32 and cause the spanning system 12 to rock on the floor and be unstable.

[0081] FIG. 3B shows how the suspended system 14 can be positioned directly over the spanning system 12 from the top view. By having the bottom tube 30 directly under the suspended system 14 the bottom tube 30 is kept from deflecting sideways when a load is applied by the user 11. Also this keeps the spanning system 12 out of the way when the user steps on and off the suspended system 14. In this embodiment the support band system 15 passed over the suspension supports 24 to the tension adjuster 20. In this embodiment, the suspension supports 24 are ½ inch diameter solid steel rod welded to the stability system 18, however many different support designs may be used from a single point to multiple points of support. The support band system 15 webbing 16 slides through the suspension supports 24 to the tension adjuster 20.

[0082] FIG. 3C shows that the bottom tube 30 is held above the floor 32, and shows how the feet 34 contact the floor 32. The feet 34 preferably include a soft rubber surface to stop the balance training system 10 from sliding on the floor.

[0083] FIG. 4 shows a close up detail of the tension adjuster 20 of the balance training system 10 where a ratchet mechanism 40 can be used to tighten or loosen the support band system 15. The user 11 hands 42 are shown adjusting the tension on the support band system 15. This type of ratchet mechanism 40 is capable of withstand high loads. The bottom tube 30 stiffness, the tension of the support band system 15, and the design of the support band system 15 all affect how the support band system 15 will deflect and move when a load is applied. The load being all or part of the user 11 body weight.

[0084] FIG. 5 shows a detail view of the stability system 18 where the legs 13 include an adjustment system 19 which includes adjustable height feet 34. The adjustment may be accomplished in many ways, preferably with a threaded adjustment 46. Although four feet are shown in the illustrated balance training system 10, three legs 13 may also be used with one leg 13 at one end and two legs 13 at the other end in a tripod arrangement. Preferably, four legs 13 are used for greater stability at both ends of the balance training system 10.

[0085] FIG. 6 shows the balance training system 10 with an alternative suspended system 14 which uses a fixed length webbing 50 which has a sewn loops 51 at both ends. A U-shaped bolt 53 is attached and tightened with tension nuts 54. This system is simple to change the band and easy to tighten the band or strap.

[0086] FIG. 7 shows a cross section of the fixed length webbing 50 and the U-shaped bolt 53 and the tension nuts 54. The U-shaped bolt 53 goes through a hole in the spanning system 12 such that when the tension nut 54 is turned it loosens or tightens the fixed length webbing 50.

[0087] The balance training system 10 as illustrated in FIG. 1 through 7 shows webbing 16 as the suspended system 4 however may different materials may be employed depending on the properties desired in the suspended system 4. Many different materials and shapes may be used such as but not limited to, plastic, natural or synthetic threads, metals, rubber, wood in many shapes, such as bands, wire, rope, wire rope, and planks with different cross sectional shapes or even varying cross sectional shape alone or in combination with another material. Preferably the width of the suspended system is between ½ and 6 inches, and more preferably between 1 and 4 inches.

[0088] FIG. 8 shows a suspended system 14 of the balance training system 10 which consists of a rope 60 which goes over a pulley 61 and is tightened with tension nuts 54. Alternatively the rope may end directly at bolt 53 and be tightened with one tension nut 54.

[0089] FIG. 9 shows a fixed length strap 65 which connects with hooks 66 to the stability system 18 held together with a spanning bar 67 which has pivot bolt 68 at both ends. In addition there is a tightening system 64 which includes rods 69 and a turnbuckle 70. The turn buckle 70 when turned adjusts the tension of the strap 65.

[0090] FIG. 10 shows that in addition to the tightening system 64 a deflection controller 72 can be incorporated to dampen or add bounce to the movement of the strap 65 when a dynamic load is applied, such as the user 11 walking or jumping on the strap 65. The deflection controller 72 may be a spring 73 or be a piece of rubber or a hydraulic cylinder as used in chairs or cars for dampening and shock absorption.

[0091] FIG. 11 shows the balance training system 10 with a stiffener 75 positioned to reduce deflection of the bottom tube 30. The stiffener 75 may be removable or adjustable to cause the suspended system 14 to react differently under fixed or dynamic load. The stiffener 75 allows for the use of thinner tubing and can help to reduce the unit’s weight, to make it easier to transport.

[0092] FIG. 12 shows a beam 80 which may be suspended by the spanning system 12. The beam 80 may replace the
support band system 15 or be placed over or on the support band system 15 as shown in FIG. 13. The beam 80 provides a stiffer surface for the user 11 to practice on. The beam 80 rests upon and is supported by the spanning system 12. The beam 80 is easily put on or take off. After the user 11 has trained and is able to move around on the beam 80, they are ready to remove it and work on the support band system 15. The beam 80 may balance on one or more locations at either end. The way the beam 80 connects to the spanning system 12 determines how difficult exercising on the beam 80 is. The beam 80 is like a log that one might walk across a stream, there exists the possibility of the log rolling, or falling off the log or causing the log to fall off the bank. The beam 80 may alternatively be placed on or connected to the support band system 15 and not the spanning system 12, such that the beam 80 can move and twist as allowed by the support band system 15. A shorter beam 80 allows more movement. In addition more than one beam 80 can be used that are connected to or sit upon the support band system 15.

FIG. 13 shows locking pins 82 which may be inserted into the beam 80 through holes 83, with the holes 83 located below the support band system 15. The locking pins 82 can keep the beam 80 from coming off during use. The beam 80 may be connected many different ways to have different amounts and types of movement. The connections may also be permanent or temporary.

FIG. 14 shows the beam 80 with stabilizing hooks 81 to reduce the side movement and possible falling off of the beam 80. Besides the stabilizing hooks 81 other connectors such as pins, springs, or clamps may be used to connect the beam to the spanning system 12.

The beam 80 may be many widths preferably between 1 and 6 inches more preferably between 2 and 4 inches.

FIG. 15 shows the user 11 walking on the beam 80 suspended at either end by the spanning system 12. The beam 80 has an anti-slip surface 85 and in the illustrated embodiment is diamond plated sheet metal 86, however many other systems may be used to create an anti-slip surface including but not limited to rubber, rough textures, holes, sand paper, and fabric attached to the beam 80.

FIG. 16 shows the user 11 using balancing poles 90 to help them learn to balance. The balancing poles 90 provide additional stability and allow the user 11 to regain their balance with only light touches of the tips 91 on the ground. Unlike ski-pole tips which are pointed the balancing pole 90 tips 91 are small pads preferably rubber so they will not slip when they touch the ground.

FIG. 17 shows one balance training exercise where the user 11 tries to remain standing, one leg on the suspended system 14. Although this appears simple, a study conducted with 50 professional fitness trainers showed that none could balance one leg for two minutes and only a few were able to achieve one minute. This type of balance requires intense concentration, quick reflexes, along with tremendous muscle strength and control. It requires the user 11 to use, control, and monitor every part of their body. Because the system is suspended the axis of the balance pivots goes through the user.

FIG. 18 shows how the user 11 must use every part of their body to remain balanced and to keep from falling off the balance training system 10. In FIG. 18 the user 11 holds out their arms and other leg while at the same time tilting their foot in order to remain balanced. The suspended system 14 twists and swings with the slightest bending of the ankle and body.

FIG. 19 shows the user 11 standing on one foot on the balance training system 10 and holding one foot out while bending the supporting knee. While standing on the balance training system 10 the user 11 makes all standard exercise much more difficult. The user 11 may bounce balls, lift weights, or juggle while trying to maintain their balance while standing on the balance training system 10.

FIG. 20 shows the user 11 doing a ballet stretching exercise where the user 11 stretches out their body horizontally while balancing on one leg on the balance training system 10.

FIG. 21 shows the user 11 balancing sideways on two feet on the balance training system 10. Here the user 11 is balancing on the balls of their feet while trying not to swing or twist the suspended system 14.

FIG. 22 shows the user 11 balancing on the suspended system 14. The user 11 is doing a stretching exercise, standing close to where the suspension system 14 connects to the spanning system 12. The closer the user 11 is to this connection the more stable the system is. The user 11 can also train by positioning part of their body on the spanning system 12 to help balance the part that is on the suspended system 14.

FIG. 23 shows the user 11 using the balance training system 10 as a trampoline to bounce into the air. The balance training system 10 acts similar to a bow used in archery and propels the user 11 upwards.

FIG. 24 and FIG. 25 shows the user 11 using the ground in conjunction with the balance training system 10 to enhance push up exercises 5. The user 11 places one or both feet on the ground with their hands on the suspended system 14. The suspended system 14 also acts to reduce the stress on the user 11 hands and wrists by flexing under the load.

FIG. 26 shows the user 11 propelling themselves into air while doing push ups, with the trampoline effect of the suspended system 14.

FIG. 27 shows the balance training system 10 with two suspended systems 14. This embodiment allows each of the users legs to be on separate suspended systems 14. This is good for training skiers, skaters, and other athletes who switch balance from one foot to the other.

FIG. 28 shows two balance training systems 10 that may be used together. The balance training systems 10 may also be connected together with a connector 95. The connector 95 keeps the balance training systems 10 from sliding apart. Connector 95 may be designed to hold the two balance training systems 10 apart at different distances, both parallel and non-parallel to each other.

FIG. 29 shows the balance training system 10 with the suspended system 14 with a suspended platform 100. The suspended platform 100 hooks 101 hooks on to the spanning system 12. The hooks 101 are part of the support swing 104 which spans between the hooks 101 and holds up the suspended platform 100. The suspended platform may be flat like a board and swing side to side and back and forth like a playground swing. In FIG. 29 the suspended platform 100 is a cylinder 102 and can spin 103 on the support swing 104. Balancing on the exercise system is extremely difficult and is similar to balancing on a log on a river where the log can rotate as well as move in any direction.

FIG. 30 shows another embodiment of the present invention where the balance training system 200 includes a
height adjustment and angle adjustment. FIG. 30 shows a set of pivoting legs 201 which can rotate to change the height of the balance training system 200. A rotation pin 202 can be inserted into different holes in the pivoting legs 201, to raise or lower one or both sides such that the different ends may be at the same or different heights. The slope of the suspended system 14 can be parallel with the ground or angled. FIG. 30 shows the spanning system 12 made from rectangular tubing 203 angled up at the ends to create the positions in space for the suspended system 14 to be connected.

[0111] FIG. 31 shows the balance training system 200 where the pivoting leas 201 have been rotated and the spanning system 12 is on top. The user 11 can now use the rectangular tubing 203 as a surface to balance on, like a balance beam. The balance training system 200 can be quickly switched between the suspended system 14 for training and the spanning system 12 beam for training, just by turning it over. This gives the user 11 two different options of exercise environments without the need for a separate device or beam.

[0112] FIG. 32 shows an alternative embodiment for the balance training system 300 which folds up. There is a spanning system 12 with legs 302 with a hinge 301 designed such that when the user 11 places their body on the suspended system 14 the pressure causes feet 33 to push against the floor and tension the suspended system 14. By lifting the ends of the suspended system 14 the balance training system 300 folds up. Alternatively, hinges may be put into the spanning system 12 of any embodiment such that the present invention may be folded up by releasing the tension or disconnecting the suspended system 14.

[0113] Alternatively, the present invention may in addition to folding, separate into smaller sections for transport and storage. All these embodiments are valuable because they do not require fastening a rope or band between to separate solid objects such as buildings or poles, both of which are firmly affixed to the ground. Nothing in the present invention requires that the apparatus be affixed to the ground. All support comes from the present invention itself.

[0114] In the preferred embodiment the balance training system 10 consists of a spanning system 12 constructed of materials stiff enough to support the suspended system 14 and a suspended system 14 strong enough to support some or all of the weight of a user 11. Preferably the spanning system 12 is made out of wood, fiberglass, plastic, metal, or other strong material. Preferably there is a bottom tube 30 made out of steel or aluminum tubing, the tubing being between 1 to 6 inches in diameter and has a rectangular, round, or oval cross section. Preferably the spanning system 12 holds the suspended system above the ground and although any height may be possible, preferably the spanning system 12 holds the suspended system 14 at a safe distance from the ground less than 3 feet and preferably between 4 and 12 inches. Preferably the distance above the ground is the same as the rise of a standard stair from one step to the next 5 to 8 inches.

[0115] Although the span of the spanning system 12 may be any length preferably the length is long enough to fit two feet on the suspended system 14. Preferably the length is long enough to take one or more steps along the suspended system. Preferably the length is greater than 1 foot but less than 10 feet long, more preferably between 3 to 5 feet in length.

[0116] An apparatus for balance training and exercise comprising:

[0117] a spanning system which creates support for two or more positions in space and holds the positions apart and a stability system which holds the spanning system and maintains the positions in space above the ground; along with a suspended system that exits between the position in space created by the spanning system such that a user may balance all or part of the user on the suspended system.

[0118] An apparatus wherein the suspended system includes a flexible member stretched between the positions in space created by the spanning system.

[0119] An apparatus wherein the suspended system includes a device to adjust the tension of the flexible member.

[0120] An apparatus wherein the suspended system is rigid.

[0121] An apparatus wherein the spanning system flexes.

[0122] An apparatus wherein the spanning system is rigid.

[0123] An apparatus wherein the suspended system can swing.

[0124] An apparatus for balance training and exercise comprising:

[0125] a non-linear spanning system which includes connection points at either end, and holds the connection points above the ground, with a suspended system which extends between two points in space such that a user may balance all or part of their body on the suspended system.

[0126] An apparatus wherein the suspended system is held above the ground from less than 1 inch to greater than 36 inches.

[0127] An apparatus wherein the height of the suspended system is adjustable.

[0128] An apparatus wherein the suspended system is less than 1 inch to greater than 4 inches wide.

[0129] An apparatus wherein the suspended system is a woven material.

[0130] An apparatus wherein the suspended system can rotate.

[0131] An apparatus wherein the spanning system folds and unfolds.

[0132] An apparatus wherein the spanning system comes apart.

[0133] A method of exercise including placing all or part of the body on a suspended system supported by a spanning system and moving parts of the body to maintain balance and remain on the suspended system.

[0134] A method of exercise wherein the spanning system can swing.

[0135] A method of exercise wherein the axis of the pivot of the swing goes through the users body.

[0136] A method of exercise wherein the user positions part of their body on the ground and the rest on the spanning system.

[0137] A method of exercise wherein the user bounces on the spanning system.

[0138] Although the invention has been described in detail in the foregoing embodiments for the purpose of illustration, it is to be understood that such detail is solely for that purpose and that variations can be made therein by those skilled in the art without departing from the spirit and scope of the invention except as it may be described by the following claims.

What is claimed is:
1. An apparatus for balance training and exercise comprising:

a spanning system which creates two or more support positions in space and holds the positions apart; and
a stability system which holds the spanning system and maintains the support positions in space above the ground; and a suspended system between the positions in space created by the spanning system such that a user may balance all or part of their body on the suspended system.

2. An apparatus as described in claim 1 wherein the spanning system and the stability system are combined in one structure.

3. An apparatus as described in claim 1 wherein the suspended system includes a flexible member stretched between the positions in space created by the spanning system.

4. An apparatus as described in claim 2 wherein the suspended system includes a device to adjust the tension of the flexible member.

5. An apparatus as described in claim 1 wherein the suspended system includes a rigid structure.

6. An apparatus as described in claim 1 wherein the spanning system flexes.

7. An apparatus as described in claim 1 wherein the spanning system is rigid.

8. An apparatus as described in claim 1 wherein the suspended system can swing.

9. An apparatus as described in claim 1 wherein the user stands on the suspended system.

10. An apparatus for balance training and exercise comprising:
    a non-linear spanning system which includes connection points at either ends and holds the connection points above the ground; and a suspended system which extends between two points in space such that a user may balance all or part of their body on the suspended system.

11. An apparatus as described in claim 10 wherein the suspended system is held above the ground from less than 1 inch to greater than 36 inches.

12. An apparatus as described in claim 10 wherein the height of the suspended system is adjustable.

13. An apparatus as described in claim 10 wherein the suspended system is less than 1 inch to greater than 4 inches wide.

14. An apparatus as described in claim 10 wherein the suspended system is a woven material.

15. An apparatus as described in claim 10 wherein the suspended system can rotate.

16. An apparatus as described in claim 10 wherein the spanning system folds and unfolds.

17. An apparatus as described in claim 10 wherein the spanning system comes apart.

18. An apparatus as described in claim 10 wherein the apparatus includes a spanning system that can be positioned for use as a balance beam.

19. A method of exercise including:
    placing all or part of the body on a suspended system supported by a spanning system; and moving parts of the body to maintain balance and remain on the suspended system.

20. A method of exercise as described in claim 19 where the user stands on the suspended system.

21. A method of exercise as described in claim 20 wherein the axis of the pivot of the swing goes through the users body.

22. A method of exercise as described in claim 19 wherein the user positions part of their body on the ground and part of their body on the spanning system.

23. A method of exercise as described in claim 19 where the user bounces on the spanning system.

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