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(54) **EXERCISE APPARATUS FOR PERFORMING SQUATS**

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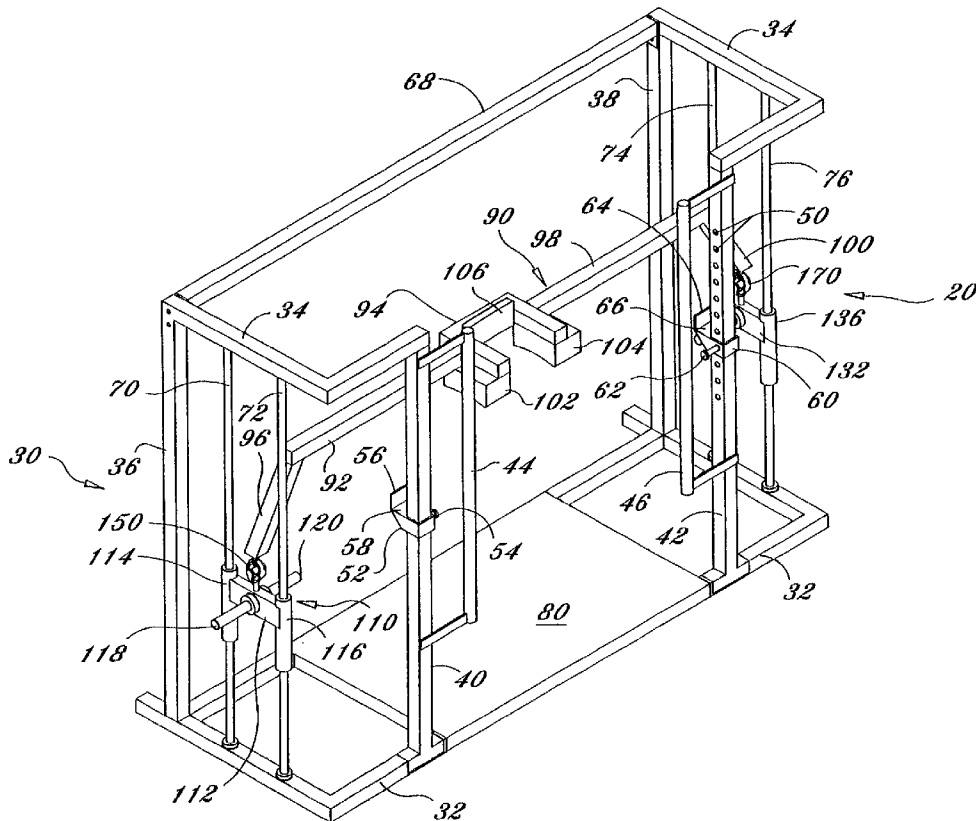
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(57) **ABSTRACT**

An exercise apparatus for performing squats is disclosed and includes in the preferred embodiment a frame, a base platform, a yoke assembly, a pair of weight carriages and a pair of universal joints. A pair of elongated handrails are attached to the frame. A pair of adjustable yoke catch/supports are operatively associated with the frame. A pair of vertical rods are disposed at each side of the frame for guiding the travel of the weight carriages when in use. The yoke assembly includes a padded neck and shoulder portion, with the shoulder pads being contoured. The weight carriages provide support for the weight plates. The location of the weight supports allow the weight plates to be disposed approximate to the height of the user's waist and closer to the user's center of gravity. A first universal joint connects the first weight carriage to the yoke assembly and a second universal joint connects the second carriage member to the yoke assembly. The universal joints allow for multidimensional movement of the yoke assembly and provide the exerciser with a greater freedom of movement, similar to the traditional "squat" exercise with free weights. The universal joints allow for a free and individual arc of motion as they serve as a fulcrum between the yoke assembly and the weight carriages, thus, allowing the user's body's exercise motion to occur in the sagittal plane as well as the frontal plane while the weight moves vertically.



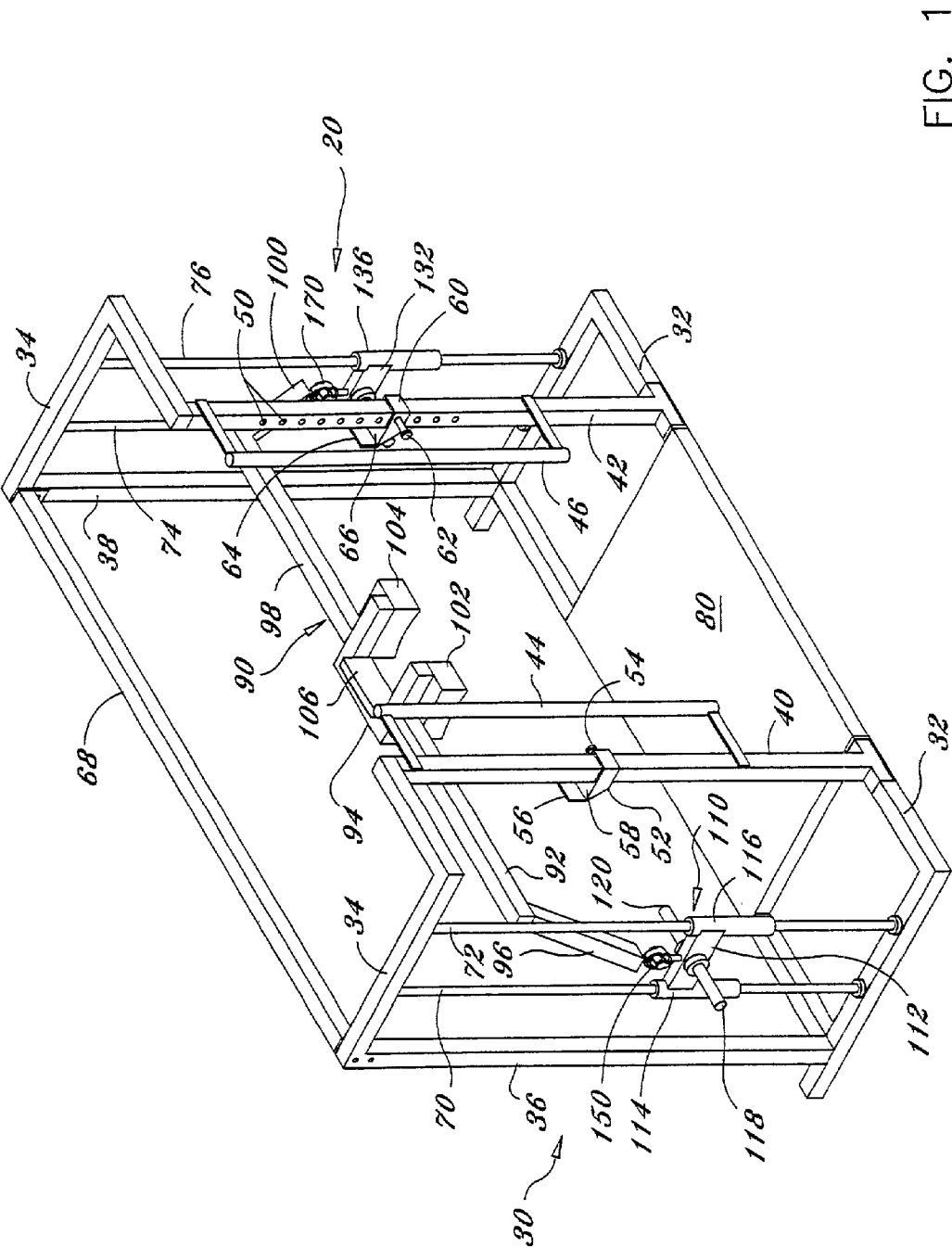


FIG. 1

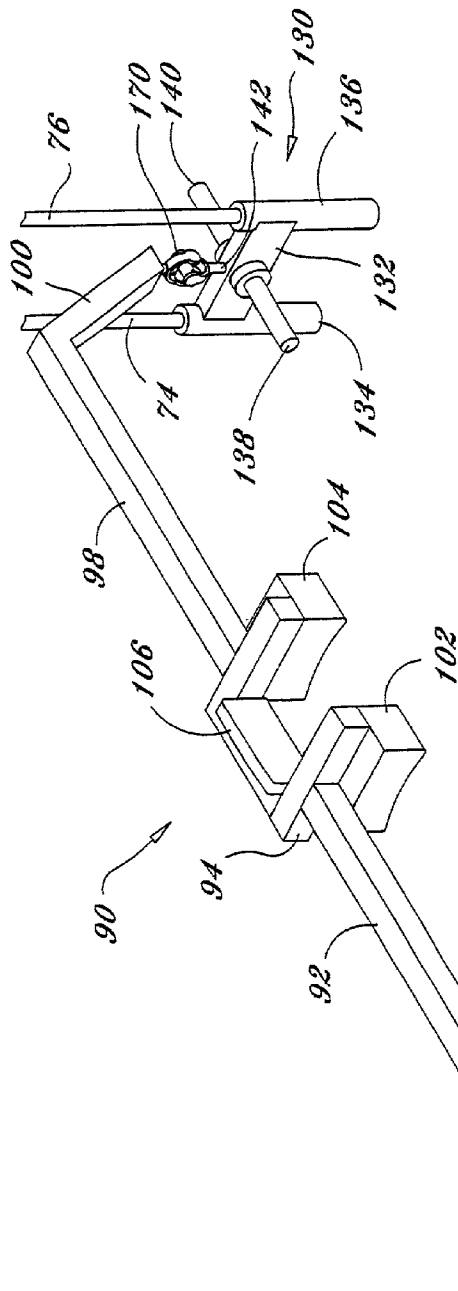


FIG. 2

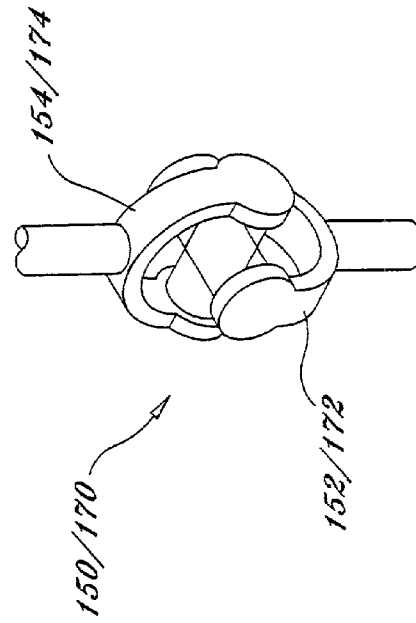


FIG. 3

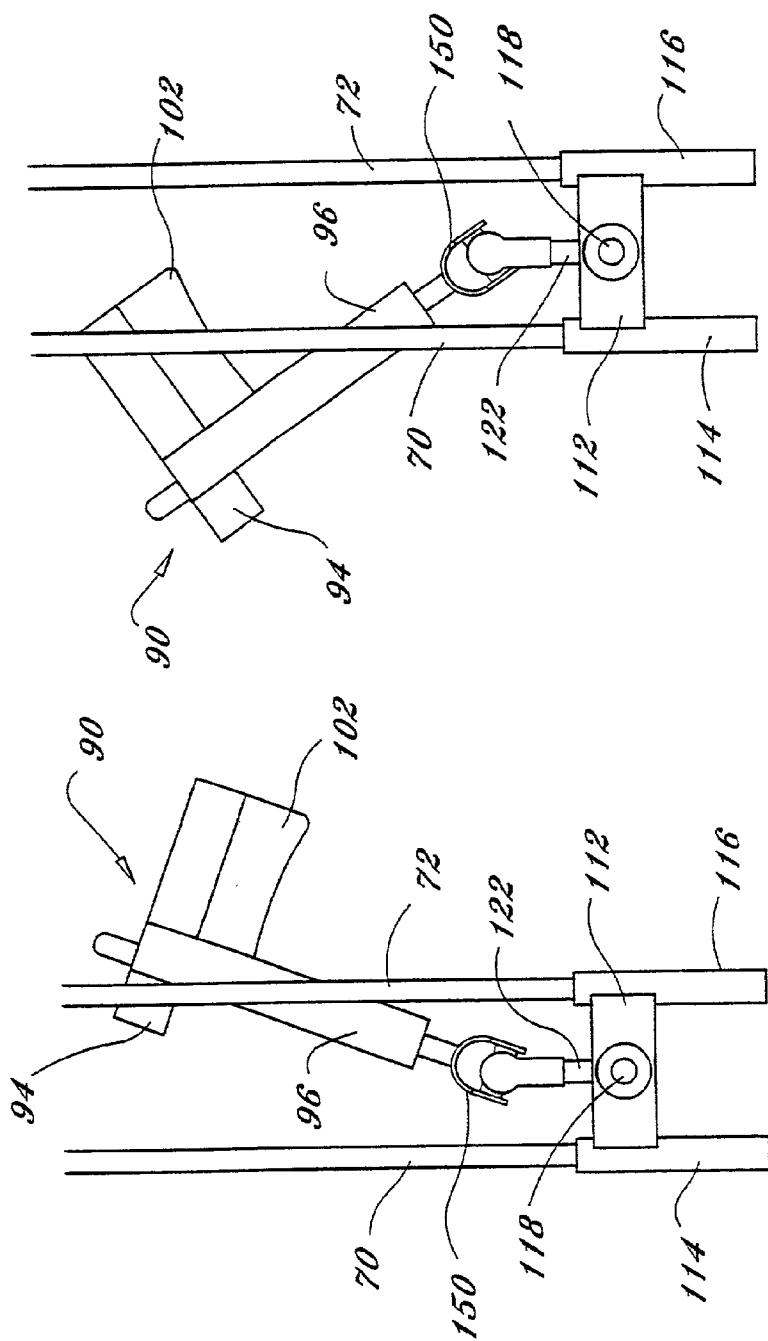


FIG. 5

FIG. 4

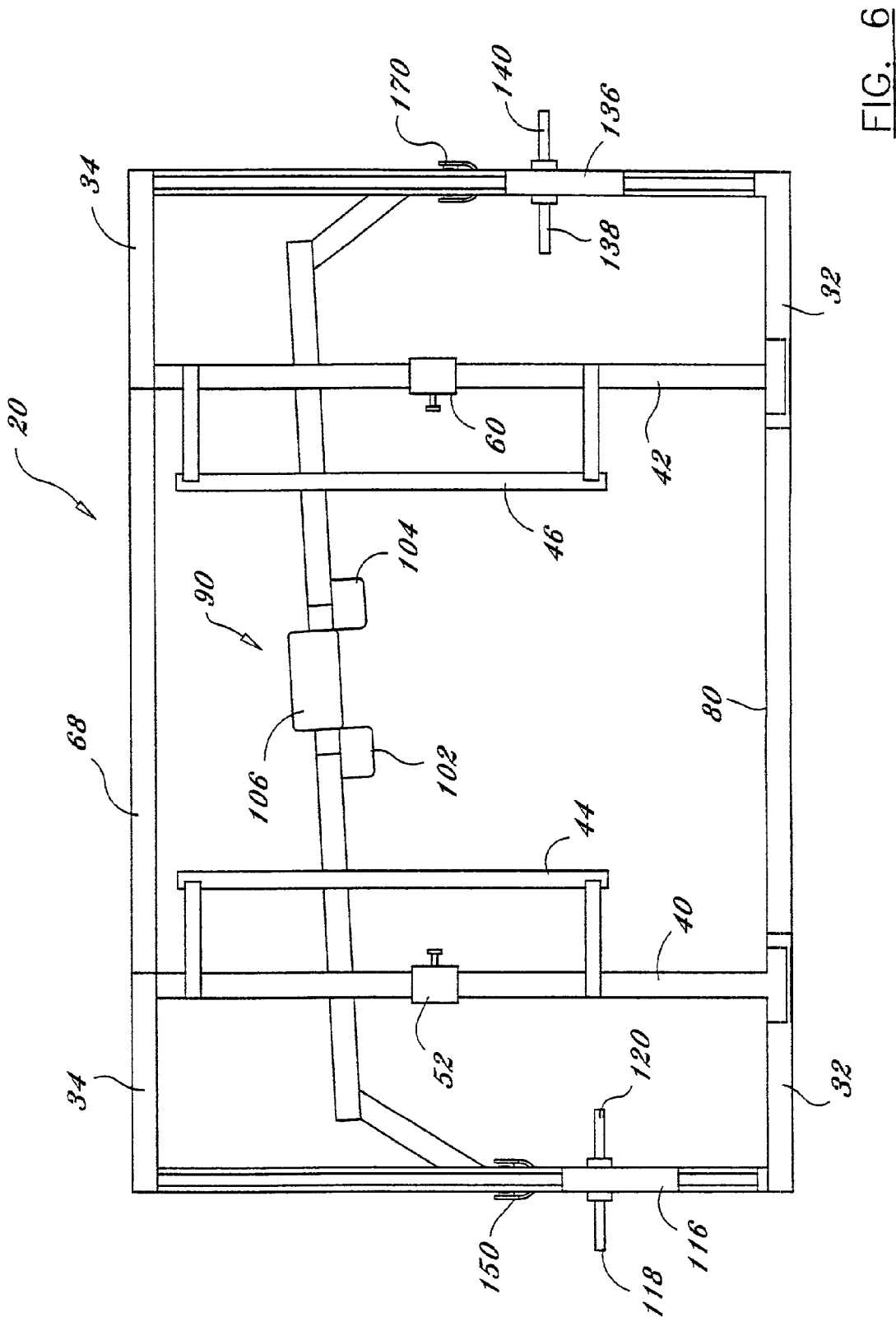


FIG. 6

EXERCISE APPARATUS FOR PERFORMING SQUATS

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] None

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] None

BACKGROUND OF THE INVENTION

[0003] 1. Field of the Invention

[0004] The invention relates generally to the field of exercise equipment, and particularly, to an exercise apparatus for performing squats, lunges, adductors/abductors, heel raises, etc.

[0005] 2. Description of Related Art

[0006] The "squat" exercise is one of the most popular exercises, as it involves the use of many human muscles, including the quadriceps group (front of the thigh), gluteus (buttocks), hamstrings group (back of thigh), as well as the muscles of the lower back, trunk and pelvis. The squat exercise also involves the extension of the hip and knee joints, thus, stimulating the muscles directly involved in the basic skills of jumping, running, kicking, skipping, lifting and pushing. Additionally, the squat provides a high systemic load on the performer's body, and greatly stimulates the performer's neuromuscular system as well his or her skeletal system. When performed with proper intensity, the squat exercise places great demands on the body's bio-energy systems and can also stimulate its neuro-endocrine systems.

[0007] The performance of the squat exercise involves the execution of a variable depth deep knee bend from a standing position while placing a variable resistance load upon the body. Traditionally, squats are performed by use of equal amounts of free weights disposed and retained at each end of a barbell, with the barbell extending across the performer's shoulders and resting on his or her upper trapezius muscles. The barbell is held in place by the user gripping the barbell with his or her hands, preferably with a slightly wider than shoulder width grip.

[0008] Some benefits from performing squat exercises include that it is considered a "core" strength building exercise, it is a weight bearing exercise that aids in the prevention of osteoporosis and increases bone density, and it is a functional exercise that stimulates actions performed daily by all able bodied individuals.

[0009] However, the "squat" is a complicated exercise needing caution and ability to perform safely and effectively. The proper execution of a "squat" exercise involves the following: (1) proper stance, (2) proper support of resistance load across the shoulders, (3) maintenance of a straight or normally arched (extended) lower back, (4) inclination of the trunk no more than forty-five (45°) degrees from the vertical, (5) keeping head neutral and eyes forward, (6) keeping heels down, (7) lowering to a position where thighs are horizontal, and (8) extending hips and legs back to an upright position.

[0010] Though the squat exercise provides many benefits, there are also safety concerns when performing this exercise. With the use of free weights, the user exposes him or herself to risk of injury to his or her lower back, knees, as well as his or her neck and shoulder joints. Additionally, individuals with lower back and knee problems often do not include squat exercises in the exercise routines out of fear of further injury.

[0011] These safety concerns have caused many potential users to avoid performing squats, or only to perform the exercise when a spotter is available. Furthermore, the safety concerns often caused the user to use a lower weight, than the user is capable of properly lifting, thus reducing the optimal benefits the user could achieve from the exercise.

[0012] Thus, what is needed in the art is an exercise apparatus which permits a user to perform a squat without the risk of injury associated with performing a squat with free weights, and also without the need of a spotter. It is therefore, to the effective resolution of the aforementioned problems and shortcomings that the present invention is directed.

BRIEF SUMMARY OF THE INVENTION

[0013] The present invention provides an exercise apparatus for performing squats, lunges, adductors/abductors, weighted heel raises, etc. The exercise apparatus generally includes a frame member, a base platform, a yoke assembly, a pair of weight carriage members and a pair of universal joints. The frame member includes a bottom section, a top section, back vertical sections attached to the bottom section and the top section, and front vertical sections also attached to the bottom section and the top section. The top section can also include a cross beam or spanner attached along the back of frame.

[0014] A first elongated handrail is attached to a first front vertical section and a second elongated handrail is attached to a second front vertical section. A first plurality of apertures are provided along a portion of the first front vertical section and a second plurality of apertures are provided along a portion of the second front vertical section.

[0015] A first catch member is associated with the first front vertical section and remains attached to the front section through a pin portion inserted within one of the apertures. The catch member can be moved/slid along vertical section by pulling its handle which causes the catch member's pull pin to be removed or withdrawn from its position within one of the apertures. Once the catch member is properly positioned, the user releases the handle causing the pin portion to be inserted into the aligned aperture. A wall portion of the catch member, along with a portion of first front vertical section define a first yoke receiving/support area. Similarly, a second catch member, having a handle and pull pin, is associated with the second front vertical section and its plurality of apertures.

[0016] A first pair of vertical guide rods are preferably disposed at a first end of the frame, and a second pair of vertical guide rods are preferably disposed at a second end of the frame. The guide rods extend from the bottom section to the top section and are disposed intermediate of the back vertical sections and the front vertical sections.

[0017] The base platform is preferably attached the bottom section. At least a portion of the top surface of the base member can be provided with a non-skid surface.

[0018] The yoke assembly preferably includes an integrally constructed first horizontal portion, a neck and shoulder portion, a first angled portion, a second horizontal portion, and a second angled portion. A pair of contoured shoulder pads are preferably provided at the bottom of the neck and shoulder portion. Additionally, a neck pad can also be provided on an inner side of the neck and shoulder portion.

[0019] A first weight carriage is provided at a first end of the frame and a second weight carriage is provided at the second end of the frame. The first carriage is provided with weight supports/holders and moves vertically along its associated vertical guide rods. Similarly, the second carriage is also provided with weight supports/holders and moves vertically along its associated vertical guide rods. The location of the weight supports allow the weight plates to be disposed approximate to the height of the user's waist and closer to the user's center of gravity.

[0020] A first universal joint connects the first weight carriage to the yoke assembly and a second universal joint connects the second carriage member to the yoke assembly. The universal joints allow for multidimensional movement of the yoke assembly.

[0021] The pivotable nature of the universal joints provides the user with a greater freedom of movement, similar to the traditional "squat" exercise with free weights, and also ensures proper technique, while also allowing the user to have an individualized path of motion for the exercise and to maintain his or her natural lordotic curve. The user is not forced to follow the path of motion of the weight carriage members.

[0022] Thus, the universal joints act as an interface/pivot point/fulcrum between the motive force and resistance force of the exercise apparatus and provide the user an exercise path of motion in the vertical, frontal and sagittal planes. The exercise apparatus of the present invention, though considered a machine, provides a user a with free weight squat motion. The user of the present invention exercise apparatus is allowed to follow the natural arc of the squat exercise, thus requiring use of all stabilizing muscles used when performing a squat exercise with free weights.

[0023] The universal joints allow for a free and individual arc of motion as they serve as a fulcrum between the yoke assembly and the weight carriage members. The universal joints allow for the user's body's exercise motion to occur in the sagittal plane as well as the frontal plane while the weight moves vertically. Additionally, the resistance force of the weight acts predominantly at the body's center of gravity and through its midline rather than at shoulder height when using free weights, where it is known to push the exerciser's upper body forward and down. The present invention exercise apparatus preferably includes the following characteristics: (1) self-spotting; (2) relatively heavily padded neck and shoulder pads to decrease neck and shoulder joint strain; (3) natural stance and bio-mechanics of a deep knee bend; (4) ability to keep proper torso posture to protect lower back; (5) range of motion limits well within fortyfive (45°) degrees, but still with enough mobility to promote neuromuscular recruitment of the trunk and whole body proprioception and thus promote stability for other athletic motion; (6) while providing for comfort and safety, the exercise apparatus provides no mechanical advantage and the user

supports all of the weight, thus, providing for a free weight feel; (7) multi-directional universal joint (u-joint) allows the user to follow their own innate path of motion, and does not force the exerciser with their unique anatomical lever systems and biomechanics into a universal arc of motion; (8) provides a four-point stance (feet and hands) to allow the trunk to remain closer to vertical which in turn allows the heels to remain on the ground upon lowering the body; and (9) four point stance also helps to prevent the knees from crossing forward over the vertical plane of the feet which helps to prevent knee pain and injury.

[0024] Accordingly, it is an object of the present invention to provide an exercise apparatus for performing squats.

[0025] It is another object of the present invention to provide an exercise apparatus for performing squats without the risk of injury associated with using free weights for the exercise.

[0026] It is still another object of the present invention to provide an exercise apparatus for performing squats without the necessity of having a spotter while performing the exercise.

[0027] In accordance with these and other objects which will become apparent hereinafter, the instant invention will now be described with particular reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0028] The invention may be better understood by reference to the drawings in which:

[0029] FIG. 1 is a perspective view of the exercise apparatus in accordance with the present invention;

[0030] FIG. 2 is a perspective view of the yoke assembly attached to the weight carriage members of the present invention;

[0031] FIG. 3 is a perspective view of the universal joint in accordance with the present invention;

[0032] FIG. 4 is a side elevational view of the yoke assembly of the present invention in a forward position;

[0033] FIG. 5 is a side elevational view of the yoke assembly of the present invention in a rearward position; and

[0034] FIG. 6 is a front elevational view of the present invention exercise apparatus illustrating the yoke assembly at a slight vertical angle.

DETAILED DESCRIPTION OF THE INVENTION

[0035] As seen in the drawings an exercise apparatus in accordance with present invention is illustrated and generally designated as reference numeral 20. Exercise apparatus generally includes a frame member 30, base member or platform 80, a yoke assembly 90, a pair of weight carriage members 110 and 130 and a pair of universal joints 150 and 170.

[0036] Frame member 30 includes a bottom section 32 and a top section 34. Back vertical sections 36 and 38 are provided and attached at their first ends to bottom section 32 and at their second ends to top section 34. Sections 36 and/or

38 can be removably attached to sections **32** and/or **34** by conventional means such as screws, bolts, nuts, washer combinations, etc. Alternatively, sections **36** and/or **38** can be constructed integral with sections **32** and/or **34**. Front vertical sections **40** and **42** are provided and attached at their first ends to bottom section **32** and at their second ends to top section **34**. Sections **40** and/or **42** can be removably attached to sections **32** and/or **34** similar to the attachments of back vertical sections **36** and/or **38** to section **32** and/or **34**. Top section **34** can include a cross beam or spanner **68** attached along the back of frame. Spanner **68** can be removably attached or constructed integral. Sections **32**, **34**, **36**, **38**, **40**, **42** and **68** can be constructed from conventional materials such as steel, aluminum, metal, etc.

[0037] A first elongated stationary grip member or handrail **44** is attached to front vertical section **40** and a second elongated stationary grip member or handrail **46** is attached to front vertical section **42**. The attachments of grip members **44** and **46** to vertical sections **40** and **42**, respectively, can be removable or constructed integral. The preferred forward position of handrails **44** and **46**, allows apparatus **20** to be self-spotting, thus, permitting the user to safely perform "squat" exercises alone and/or without the aid of a spotter. Handrails **44** and **46** help to provide stability to the user and also help to eliminate hyperextension of the user's shoulders.

[0038] A first plurality of apertures (not shown) are provided along a portion of front vertical section **40** and a second plurality of apertures **50** are provided along a portion of front vertical section **42**. Though not shown, the first plurality of apertures are similar to second plurality of apertures **50**.

[0039] A first catch member **52** is associated with front vertical section **40** and remains attached to section **40** through a pin portion inserted within one of the apertures on section **40**. Catch member **52** can be moved/slid along vertical section **40** by pulling its handle **54** which causes catch member **52**'s pull pin to be removed or withdrawn from its position within one of the apertures of the first plurality of apertures. Once catch member **52** is properly positioned, the user releases handle **54** causing the pin portion to be inserted into the aligned aperture. A wall portion **56** of catch member **52**, along with a portion of front vertical section **40** define a first yoke receiving/support area **58**. Similarly, a second catch member **60**, having a handle **62** and pull pin, is associated with front vertical section **42** and its plurality of apertures **50**. Second catch member **60** also includes a wall portion designated reference numeral **64**. Wall portion **64**, along with a portion of front vertical section **42** define a second yoke receiving/support area **66**.

[0040] The pull pins of catch members **52** and **60**, in conjunction with first and second plurality of apertures of front vertical sections **40** and **42**, respectively, allow for easy height adjustment of catch members **52** and **60**. Preferably, in use, catch members **52** and **60** are disposed at the same vertical height, though such is not considered limiting, and the catch members can be disposed, if desired, at different vertical heights. The length of first grip member **44** and second grip member **46**, as well as the height adjustability of catch members **52** and **60**, are preferably chosen to accommodate the varying heights and arm lengths of different users who may use apparatus **20**.

[0041] A first pair of vertical guide members **70** and **72** is preferably disposed at a first end of frame **30**, and a second pair of guide members **74** and **76** is preferably disposed at a second end of frame **30**. Guide rods **70**, **72**, **74** and **76** extend from bottom section **32** to top section **34** and are disposed intermediate of back vertical sections **36** and **38** and front vertical sections **40** and **42**. In the preferred embodiment guide members **70**, **72**, **74** and **76** are rod or rod-like members, and thus substantially circular in cross-sectional shape. Though not preferred, other shapes for guide members can be provided, and are considered within the scope of the invention. Vertical guide members **70**, **72**, **74** and **76** can be case hardened, though such is not considered limiting.

[0042] Base member or platform **80** is preferably provided and preferably attached at each of its to bottom section **32**. Base member **80** can be removably attached to bottom section **32** or constructed or integral therewith both by conventional means. At least a portion of the top surface of base member **80** can be provided with a non-skid surface. When a user is performing an exercise with apparatus **20**, he or she preferably stands on base member **80**. Feet positioners or indicators, such as a lines or markings, can be disposed on the top surface of platform **80** for proper user feet positioning.

[0043] Yoke assembly **90** includes first horizontal portion **92** attached at its first end to a first side of a neck and shoulder portion **94** and at its second end to a first angled portion **96**. A second horizontal portion **98** is attached at its first end to the other side of neck and shoulder portion **94** and at its second end to a second angled portion **100**. Preferably, though not limiting, first horizontal portion **92**, neck and shoulder portion **94**, first angled portion **96**, second horizontal portion **98** and second angled portion **100** are all constructed integral.

[0044] A pair of shoulder pads **102** and **104** are preferably provided at the bottom of neck and shoulder portion **94** to provide cushioning and comfort when a user is using apparatus **20** and the yoke assembly is resting upon the user's shoulder area. Preferably, shoulder pads **102** and **104** can be contoured to correspond to the shape of the user's shoulders and reduce compression to the user's cervical vertebrae. In addition to providing comfort to the user, contoured shoulder pads **102** and **104** also supply a greater contact area between the user and the resistive force of yoke assembly **90**, thus spreading contact forces, as opposed to a conventional weight lifting bar.

[0045] The use of yoke assembly **90**, with shoulder pads **102** and **104**, eliminates the need for external rotation at the user's shoulder joint(s) during the performance of the squat exercise motion with apparatus **20**. As such, stress to the joint(s) are relatively greatly minimized, thus reducing injuries traditionally associated with the "squat" exercise.

[0046] Additionally, a neck pad **106** can be provided on an inner side of neck and shoulder portion **94** to provide protection and cushioning to the back of the user's neck during use of apparatus **20**.

[0047] A first carriage member **110** is provided at a first end of frame **30** and a second carriage member **130** is provided at the second end of frame **30**. First carriage member **110** includes a substantially vertically oriented body

member **112** having a first tube-like member **114** disposed at one end and a second tube-like member **116** disposed at its second end. One or more weight support members can be associated with first carriage member **110**. In the preferred embodiment, a first weight support post **118** can protrude outward from a first side of carriage member **110** and a second weight support post **120** can protrude outward from a second side of carriage member **110**. Preferably, body member **112**, tube-like members **114** and **116**, and weight support posts **118** and **120** are constructed integral, though such is not considered limiting. When properly assembled, vertical guide member **70** extends out of both ends of first tube-like member **114**, while vertical guide member **72** extends out of both ends of second tube-like member **116**. Vertical members **70** and **72** act as vertical directional guides for first carriage member **110** during use of apparatus **20**.

[0048] Similarly, second carriage member **130** includes a substantially vertically oriented body member **132** having a first tube-like member **134** disposed at one end and a second tube-like member **136** disposed at its second end. One or more weight support members can be associated with second carriage member **130**. In the preferred embodiment, a first weight support post **138** can protrude outward from a first side of carriage member **130** and a second weight support post **140** can protrude outward from a second side of carriage member **130**. Preferably, body member **132**, tube-like members **134** and **136**, and weight support posts **138** and **140** are constructed integral, though such is not considered limiting. When properly assembled, vertical guide member **74** extends out of both ends of first tube-like member **134**, while vertical guide member **76** extends out of both ends of second tube-like member **136**. Vertical members **74** and **76** act as vertical directional guides for second carriage member **130** during use of apparatus **20**.

[0049] The location of the weight support posts allow the weight plates to be disposed approximate to the height of the user's waist and closer to the user's center of gravity. Thus, the user is not pushed forward and down as in a free-weight squat.

[0050] The cross-sectional shape of weight support posts **118**, **120**, **138** and **140** are shown as being substantially circular. However, such shape is not considered limiting. Preferably the cross-sectional shape of the weight support posts is selected to correspond to the shape of the aperture on the weights to be supported. Preferably weight support posts, **118**, **120**, **138** and **140** are constructed from chrome, though other materials such as steel, aluminum, metal, etc. can also be used and are also considered within the scope of the invention.

[0051] Furthermore, other weights, not having center apertures, can be used with the present invention. In these embodiments, the weight supports associated with first carriage member **110** and second carriage member **130** will also be modified or substituted from posts **118**, **120**, **138** and **140**, to safely retain the alternative free weights. These alternative free weights and retaining mechanisms are also considered within the scope of the invention.

[0052] Preferably provided within tube-like members **114**, **116**, **134** and **136** are self-aligning linear bearings to provide a smooth and durable operation of the tube-like members and vertical guide members. Preferably, each tube-like member can be provided with eight self aligning linear bearings, though such number is not considered limiting.

[0053] A first universal joint **150** connects first carriage member **110** to yoke assembly **90** and a second universal joint **170** connects second carriage member **130** to yoke assembly **90**. Specifically, a connection post **122** depends upwards from body member **112** of first carriage member **110**. The bottom of first universal joint **150** is connected to first carriage post **122** by conventional means such as bolts, nuts, etc. Similarly, a connection post **142** depends upwards from body member **132** of second carriage member **130**. The bottom of second universal joint **170** is connected to second carriage post **142** also by conventional means. The top of first universal joint **150** is connected to the outer end of first angled portion **96** of yoke assembly **90**, while the top of second universal joint **170** is connected to the outer end of second angled portion **100** of yoke assembly **90**. Universal joints **150** and **170** allow for multidimensional movement of yoke assembly **90** to promote neuromuscular recruitment for the user of apparatus **20**.

[0054] First universal joint **150** includes a first fixed U-shaped member **152** and a second U-shaped member **154** pivotally connected to first U-shaped member **152** (FIG. 3). First U-shaped member **152** is attached to first carriage member **110** as discussed above, and second U-shaped member **154** is attached to yoke assembly **90** as also discussed above. Similarly, second universal joint **170** includes a first fixed U-shaped member **172** and a second U-shaped member **174** pivotally connect to first U-shaped member **172**. First U-shaped member **172** is attached to second carriage member **130** as discussed above, and second U-shaped member **174** is attached to yoke assembly **90** as also discussed above.

[0055] The pivotable attachment of second U-shaped member **154** to first U-shaped member **152** of first universal joint **150** and the pivotable attachment of second U-shaped member **174** to first U-shaped member **172** of second universal joint **170** provide for the multidimensional movement of yoke assembly **90** with respect to first and second carriage members **110** and **130**. This multidirectional movement of yoke assembly **90** provides the user with a greater freedom of movement, similar to the traditional "squat" exercise with free weights, and also ensures proper technique, while also allowing the user to have an individualized path of motion for the exercise and to maintain his or her natural lordotic curve. The user is not forced to follow the path of motion of weight carriage members **110** and **130** of apparatus **20**. With the use of apparatus **20**, the user is also able to recruit his or her stabilizing muscles.

[0056] Universal joints **150** and **170** act as an interface/pivot point/fulcrum between the motive force and resistance force in exercise equipment, such as exercise apparatus **20**. Universal joints **150** and **170** provide the user an exercise path of motion in the vertical, frontal and sagittal planes. Thus, exercise apparatus **20** provides a user a free weight squat motion by a machine. The multi-directional motion of yoke assembly **90** provides exercise stimulus to the user's affected muscle groups well within safe absolute limits of motion. Furthermore, the user is allowed to follow the natural arc of the squat exercise, thus requiring use of all stabilizing muscles used when performing a squat exercise with free weights.

[0057] As seen in FIG. 6, in view of universal joints **150** and **170**, yoke assembly **90** is not required to be entirely at

the same vertical height. This varying height position for different parts of yoke assembly **90**, mimics the position of a barbell extending across a exerciser's shoulders who is performing a free weight squat. Furthermore, the location of front vertical section **40** and **42** cause the sections to act as forward stop members for yoke assembly **90** (See FIG. 4). The backward stop for yoke assembly **90** is provided by the construction of universal joints **150** and **170** (See FIG. 5).

[0058] When using apparatus **20** the user carries the weight distributed evenly across his or her body and does not need to support a bar across his or her neck or trapezius muscles.

[0059] When in use, if the user is having difficulty completing a repetition he or she can slide his or her hands up handrails **44** and **46** and easily assist him or herself. Alternatively, the user can simply sit down until yoke assembly **90** reaches the bottom of its permitted range of motion and slide out of the front of yoke assembly **90**.

[0060] The use of a universal joint(s), such as universal joints **150** and/or **170**, in exercise equipment expands beyond its above described use as part of exercise apparatus **20**. Such additional use of "universal joints" as fulcrums for other methods of resistance force production include, but are not limited to, selectorized plate stacks, tensions bands, hydraulics, compressed air, electronics, and electro-magnetics.

[0061] Exercise apparatus **20** can be used in fitness clubs, educational sport facilities and injury rehab centers, personal home equipment, etc., and is not limited to any particular one use. Apparatus **20** allows the "squat" exercise, as well as other exercises, to be performed by all, regardless of age, gender or fitness level. The ergonomic design of apparatus **20** helps to reduce neck, back, shoulder and knee stress often associated with the "squat" exercise. Apparatus **20** combines the safety advantages associated with weight machines, with the benefits of free weight movement and training. Some of the benefits of using exercise apparatus **20** include: (1) the muscles used to train the user's lower body are relatively safely recruited simultaneously; (2) permits for the user's natural path of motion; (3) helps to increase the user's lower body muscle strength; (4) helps to increase the user's core body strength; (5) helps to increase the user's balance; (6) helps to increase the user's muscular hypertrophy; (7) helps to increase the user's neural patterns; (8) helps to increase the user's ligaments and tendon strengths; (9) helps to develop the large muscles of the user's lower back; and (10) helps to increase the user's bone density.

[0062] Furthermore, exercise apparatus **20** is not limited to only squat exercises. Apparatus **20** can also be used to perform common exercises such as lunges, weighted toe raises, abductor/adductor exercises, etc.

[0063] When performing a squat exercise the user steps on platform **80** and places his or her shoulder's into the contours or curves of shoulder pads **102** and **104**. The user preferably grabs onto handrails **44** and **46** (preferably at an approximate ninety (90°) degree elbow bend) and places his or her feet into an open scissor position, with one of the user's legs in front of the other. The user pushes forward with his or her rear leg until yoke assembly **90** contacts front vertical sections **40** and/or **42**. Front vertical sections **40** and/or **42** act as forward stops for yoke assembly **90**. At this

point, yoke assembly **90** is slid up front vertical sections **40** and/or **42** until it passes the yoke guards. The user next stands upright in an open scissor feet position and allows yoke assembly **90** to travel back towards its center. The user's back leg can be used for support and controlling the movement of yoke assembly **90**. The user preferably places his heels forward so that his or her knees do not past move out past his or her toes. Without leaning forward and keeping his or her back straight, the user than squats as if to sit on an imaginary stool placed behind the user. From this bottom position, the user then rises back to an upright position concentrating on applying force to the base platform through the user's feet. This technique will help ensure that the user employs proper individualized biomechanical exercise technique. This up and down motion is preferably repeated until the set is completed, at which time the user places his or her feet back into an open scissor position. The user than leans forward to allow yoke assembly **90** to again contact front vertical section **40** and/or **42**. At this point, yoke assembly **90** is slid back down front vertical sections **40** and/or **42** until it preferably rest within catch members **52** and **60**.

[0064] When performing lunges, the steps of the preceding paragraph prior to the user squatting are preferably performed. Next the user places one of his or her feet forward approximate to the front of platform **80**. The other foot is preferably placed off the back of platform **80**. While keeping his or her back erect, the user travels downward and then pushes upward extending the forward leg back into an upright position while concentrating on applying force to the base platform through the foot. When the set is completed, yoke assembly **90** is preferably returned to catch members **52** and **60** as described above. As this exercise targets one leg at a time, the user preferably switches leg positions and repeats the exercise for the opposite leg.

[0065] When performing adductor/abductor exercises, the steps of the initial steps for the squat exercise discussed above, prior to the user squatting, are preferably performed. The user than takes a relatively wide stance and turns his or her toes outward. Keeping his or her back erect, the user travels downward, with his or her adductors and abductors activated, and sits back into a squat position. Preferably, the user's knees track with their associated big and second toes. However, it is preferred that the user's knees do not move pass his or her toes. At the squat position, keeping his or her adductors and abductors activated, the user pushes up through his or heels to the upright position. Once the set is completed, yoke assembly **90** is preferably returned to catch members **52** and **60** as described above.

[0066] The instant invention has been shown and described herein in what is considered to be the most practical and preferred embodiment. It is recognized, however, that departures may be made therefrom within the scope of the invention and that obvious modifications will occur to a person skilled in the art.

What is claimed is:

1. An exercise apparatus comprising:

a frame member having a first side and a second side;

a first means for supporting resistance weight movably connected to said frame member approximately at the first side of said frame member;

a second means for supporting resistance weight movably connected to said frame member approximately at the second side of said frame member; and

a yoke assembly having a first end and a second end, said first end of said yoke assembly connected to said first means for supporting by a first universal joint, said second end of said yoke assembly connected to said second means for supporting by a second universal joint;

wherein said first universal joint acts as a fulcrum between said yoke assembly and said first means for supporting and said second universal joint acts as a fulcrum between said yoke assembly and said second means for supporting to allow a free and individual arc of motion of said yoke assembly during use.

2. The exercise apparatus of claim 1, wherein said first means for supporting is a first carriage member, said first carriage member including a body member and having at least one post member depending outward from said body member for receipt of resistance weight.

3. The exercise apparatus of claim 2, wherein said second means for supporting is a second carriage member, said second carriage member including a body member and having at least one post member depending outward from said body member for receipt of resistance weight.

4. The exercise apparatus of claim 3 wherein said frame including a first pair of vertical guides at its first side and a second pair of vertical guides at its second side, said first carriage member operatively associated with said first pair of vertical guides and said second carriage member operatively associated with said second pair of vertical guides.

5. The exercise apparatus of claim 1 wherein said frame member includes a bottom section, a top section, a pair of back vertical sections, and a pair of front vertical sections, each of said pair of back vertical sections attached at one end to said bottom section and at an opposite end to said top section, each of said pair of front vertical sections attached at one end to said bottom section and at an opposite end to said top section.

6. The exercise apparatus of claim 5 further including at least one elongated handrail.

7. The exercise apparatus of claim 6 wherein said at least one elongated handrail is a pair of stationary elongated handrails, a first of said pair of elongated handrails attached to a first of said pair of front vertical sections and a second of said pair of elongated handrails attached to a second of said pair of front vertical section.

8. The exercise apparatus of claim 5 further including means for supporting the yoke assembly.

9. The exercise apparatus of claim 8 wherein said means for supporting is a first catch member operatively associated with a first of said pair of front vertical sections and a second catch member operatively associated with a second of said pair of front vertical sections.

10. The exercise apparatus of claim 1 further including a platform associated with said frame member.

11. An exercise apparatus for performing squats, lunges and adductors/abductors, said exercise apparatus comprising:

a frame member having a first side and a second side;

a base platform associated with said frame member;

a first carriage member including a body member and having at least one post member depending outward from said body member for receipt of resistance weight, said first carriage member movably connected to said frame member approximately at the first side of said frame member, said first carriage member movable in a vertical direction with respect to said frame member;

a second carriage member including a body member and having at least one post member depending outward from said body member for receipt of resistance weight, said second carriage member movably connected to said frame member approximately at the second side of said frame member, said second carriage member movable in a vertical direction with respect to said frame member; and

a yoke assembly having a first end and a second end, said first end of said yoke assembly connected to said first carriage member by a first universal joint, said second end of said yoke assembly connected to said second carriage member by a second universal joint;

wherein said first universal joint acts as a fulcrum between said yoke assembly and said first carriage member and said second universal joint acts as a fulcrum between said yoke assembly and said second carriage member to allow a free and individual arc of motion of said yoke assembly during use.

12. The exercise apparatus of claim 1 wherein said frame including a first pair of vertical guides at its first side and a second pair of vertical guides at its second side, said first carriage member operatively associated with said first pair of vertical guides and said second carriage member operatively associated with said second pair of vertical guides.

13. The exercise apparatus of claim 12 wherein said frame member includes a bottom section, a top section, a pair of back vertical sections, and a pair of front vertical sections, each of said pair of back vertical sections attached at one end to said bottom section and at an opposite end to said top section, each of said pair of front vertical sections attached at one end to said bottom section and at an opposite end to said top section.

14. The exercise apparatus of claim 13 wherein said base platform attached to said bottom section

15. The exercise apparatus of claim 13 further including at least one elongated handrail attached to said frame member.

16. The exercise apparatus of claim 15 wherein said at least one elongated handrail is a pair of stationary elongated handrails, a first of said pair of elongated handrails attached to a first of said pair of front vertical sections and a second of said pair of elongated handrails attached to a second of said pair of front vertical section.

17. The exercise apparatus of claim 13 further including means for supporting the yoke assembly.

18. The exercise apparatus of claim 17 wherein said means for supporting is a first catch member operatively

associated with a first of said pair of front vertical sections and a second catch member operatively associated with a second of said pair of front vertical sections.

19. An exercise apparatus for performing squats, lunges, adductors/abductors and heel raises, said exercise apparatus comprising:

a frame member having a first side and a second side, said frame member includes a bottom section, a top section, a pair of back vertical sections, and a pair of front vertical sections, each of said pair of back vertical sections attached at one end to said bottom section and at an opposite end to said top section, each of said pair of front vertical sections attached at one end to said bottom section and at an opposite end to said top section, said frame including a first pair of vertical guides at its first side and a second pair of vertical guides at its second side;

a base platform associated with said frame member;

a first carriage member including a body member and having at least one post member depending outward from said body member for receipt of resistance weight, said first carriage member movably connected to said frame member approximately at the first side of said frame member, said first carriage member movable in a vertical direction with respect to said frame member, said first carriage member operatively associated with said first pair of vertical guides;

a second carriage member including a body member and having at least one post member depending outward from said body member for receipt of resistance weight, said second carriage member movably con-

nected to said frame member approximately at the second side of said frame member, said second carriage member movable in a vertical direction with respect to said frame member, said second carriage member operatively associated with said second pair of vertical guides; and

a yoke assembly having a first end and a second end, said first end of said yoke assembly connected to said first carriage member by a first universal joint, said second end of said yoke assembly connected to said second carriage member by a second universal joint;

wherein said first universal joint acts as a fulcrum between said yoke assembly and said first carriage member and said second universal joint acts as a fulcrum between said yoke assembly and said second carriage member to allow a free and individual arc of motion of said yoke assembly during use.

20. The exercise apparatus of claim 19 wherein said base platform attached to said bottom section

21. The exercise apparatus of claim 19 further including a pair of stationary elongated handrails, a first of said pair of elongated handrails attached to a first of said pair of front vertical sections and a second of said pair of elongated handrails attached to a second of said pair of front vertical section.

22. The exercise apparatus of claim 19 further including a first catch member operatively associated with a first of said pair of front vertical sections and a second catch member operatively associated with a second of said pair of front vertical sections.

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