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(54) **PORTABLE PERSONAL EXERCISE SYSTEM**

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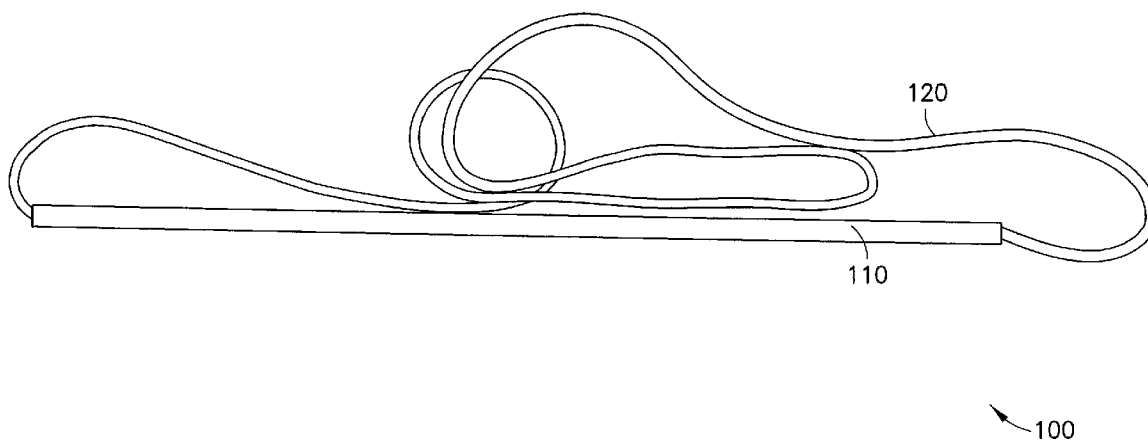
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(57) **ABSTRACT**

Related U.S. Application Data

(60) Provisional application No. 61/574,826, filed on Aug.
9, 2011.

The present invention is generally related to exercise systems and, more particularly, to such portable systems that strengthen the core and periphery of an individual independent of any external attachments.



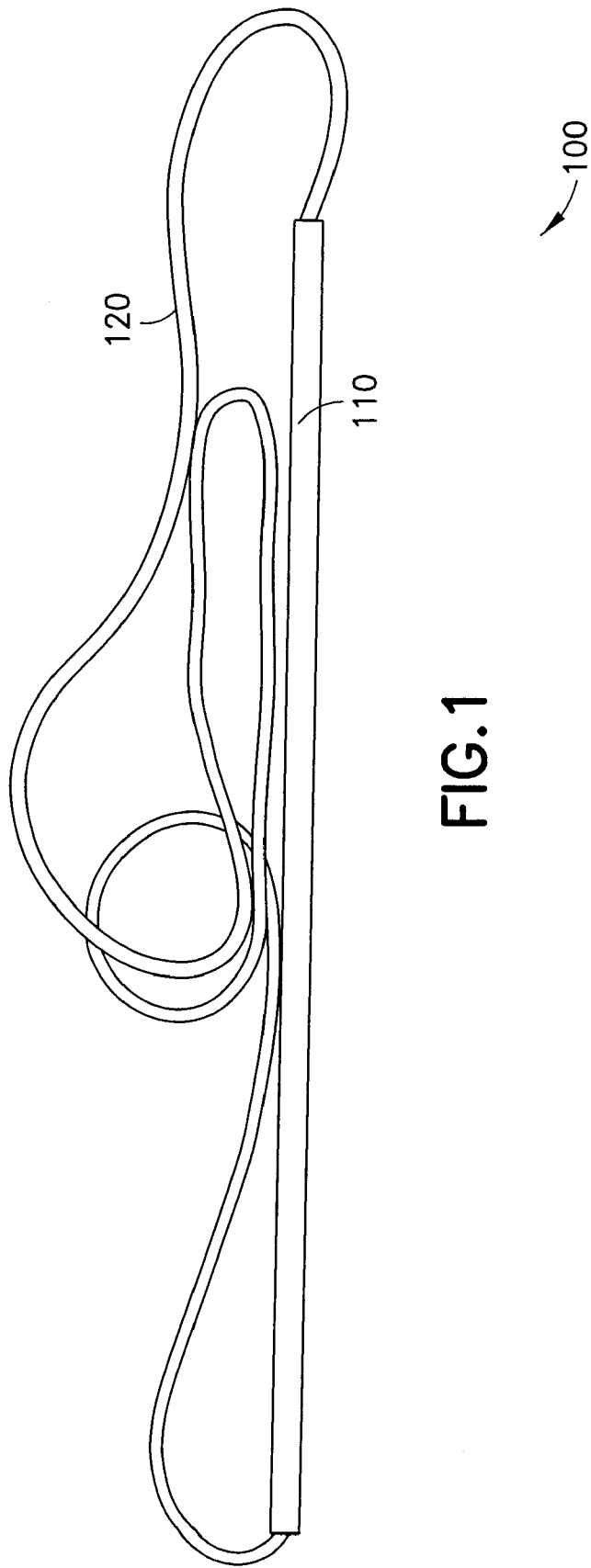


FIG. 1

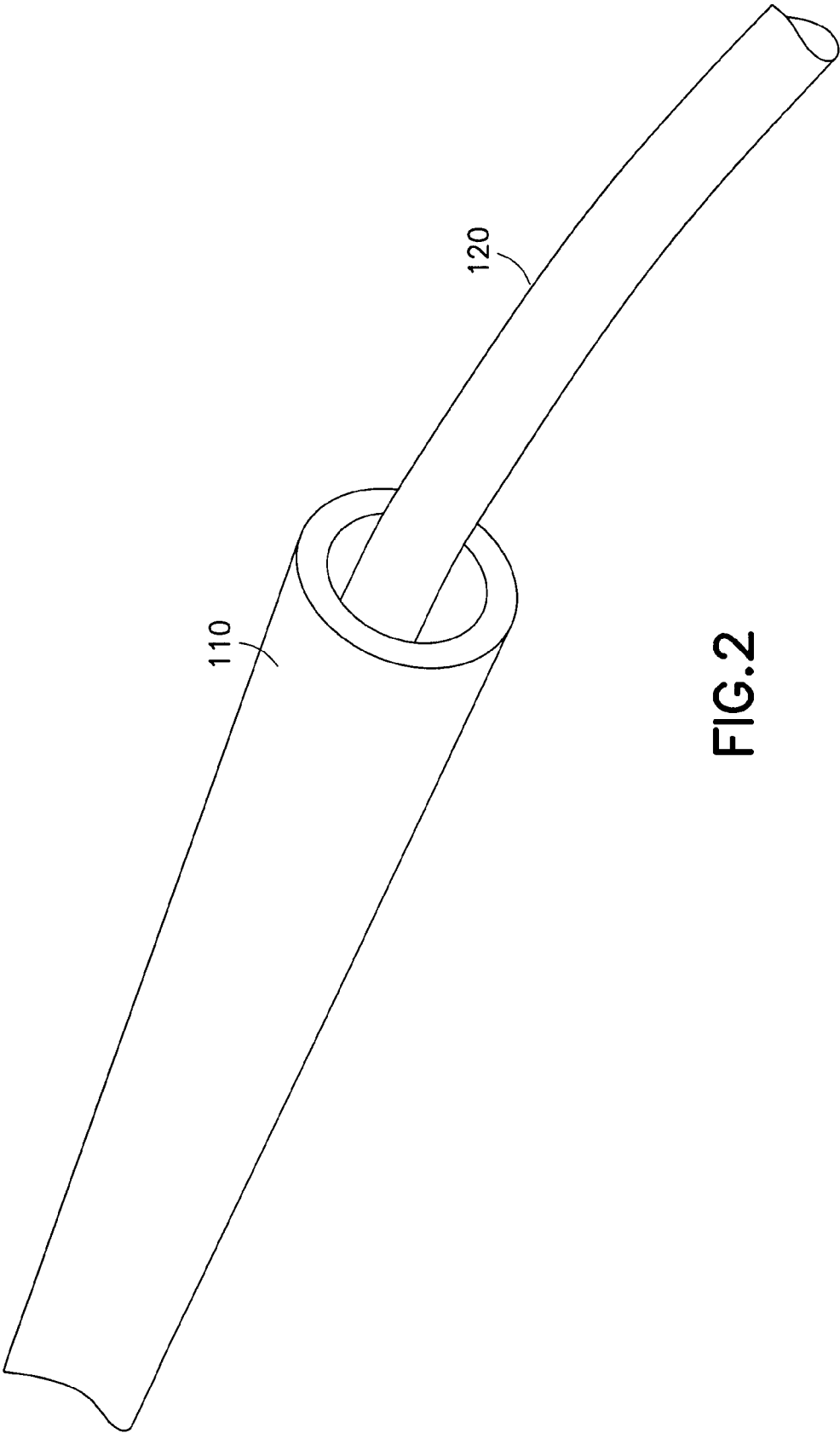


FIG. 2

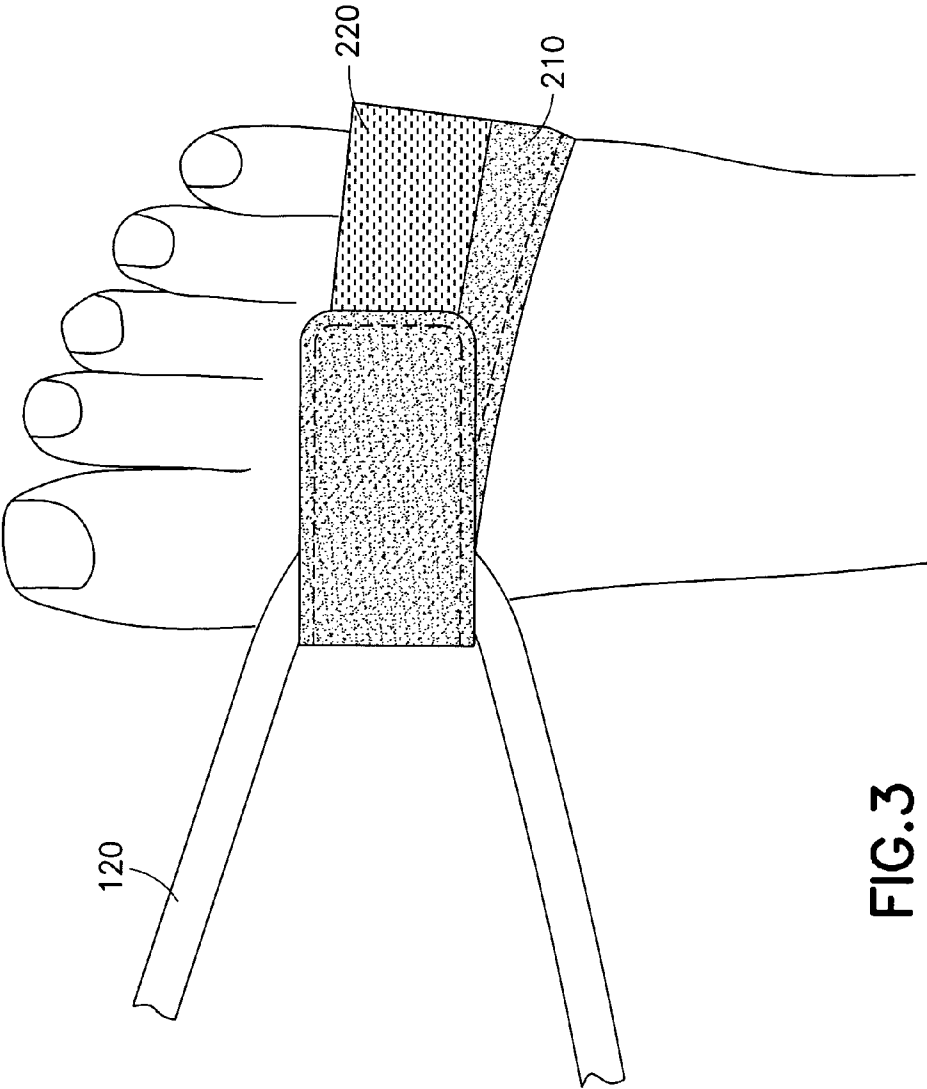
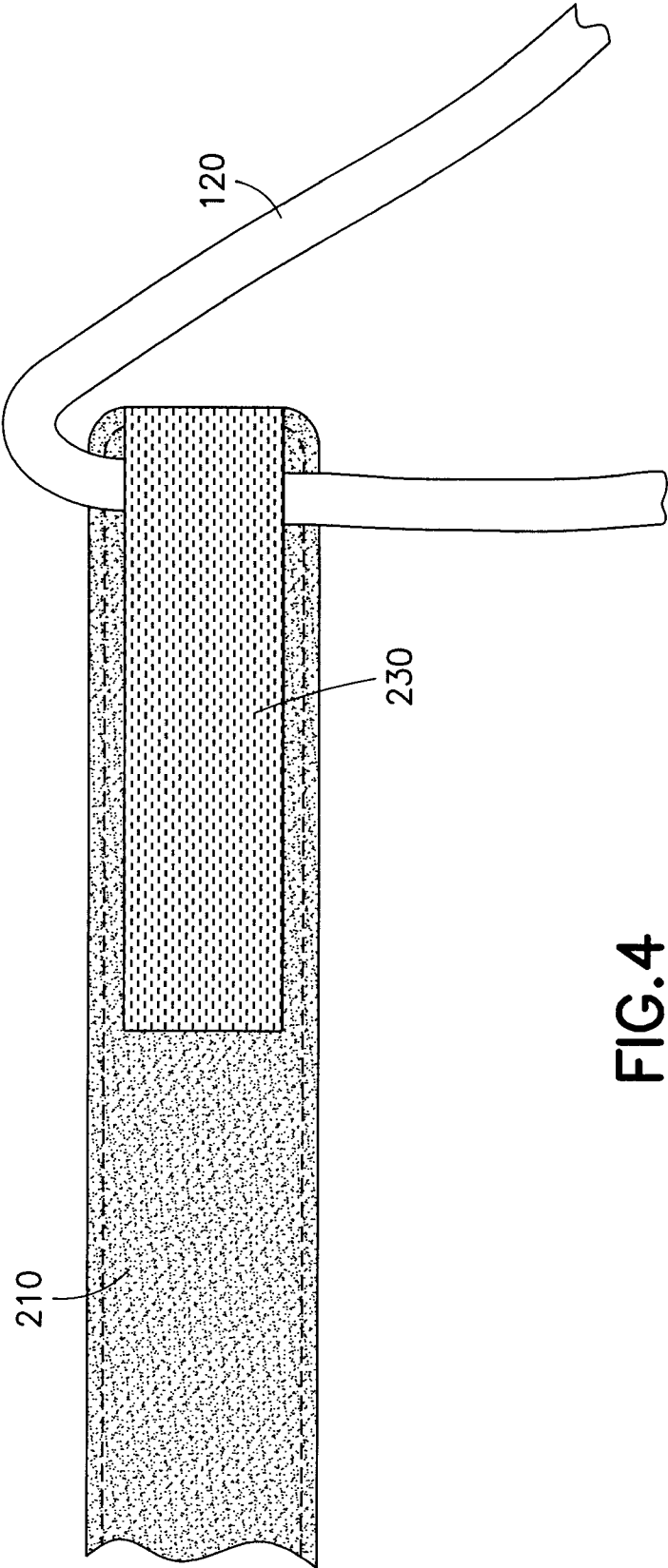


FIG. 3



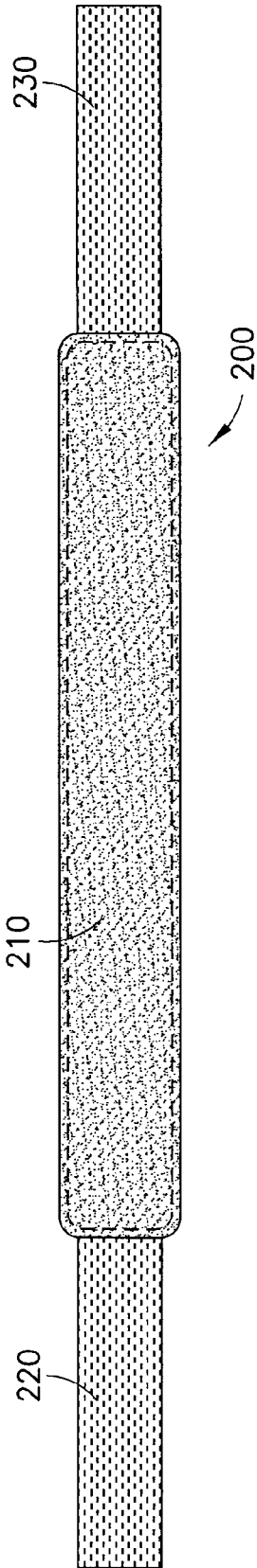


FIG. 5

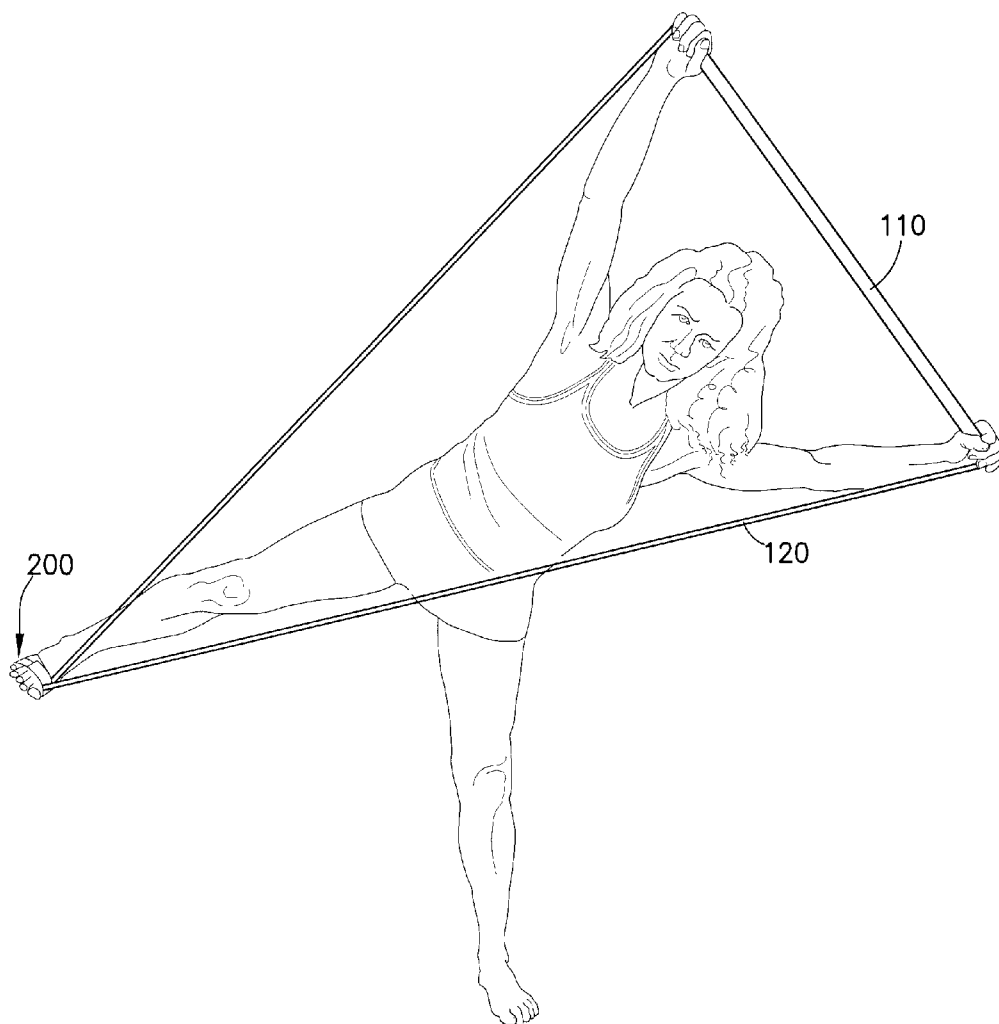


FIG. 6

PORTABLE PERSONAL EXERCISE SYSTEM

RELATED APPLICATIONS

[0001] This application claims the benefit of, and priority to, U.S. Provisional Application No. 61/574,826, filed Aug. 9, 2011, which is incorporated herein by reference in its entirety.

BACKGROUND

[0002] Existing systems and methods for resistance-based exercise use the floor, wall, barre, and/or large attachment(s), and/or allow the user only a limited range of motion.

[0003] The present invention overcomes those drawbacks and provides a versatile portable exercise system that allows a greater range of motion, helps users to move more safely and efficiently, and enables the user to understand their body's mechanics in ways that other somatic practices and physical therapy methods do not.

SUMMARY

[0004] In one aspect, the invention provides a portable personal exercise system comprising a portable personal exercise device including a cylindrical pipe or stick and a closed elastic loop. In some embodiments, the closed loop is a latex resistance cord, which can slide freely through the cylindrical pipe. The resistance cord may be adapted and/or enabled to be attached to a user's foot or ankle via an attachment component. The portable personal exercise system advantageously allows the user to train in an upright posture with free transfer of weight from limb to limb.

[0005] In some embodiments, the cylindrical pipe is plastic, such as PVC. In some embodiments, the cylindrical pipe includes a cover. In some embodiments, the cylindrical pipe comprises two or more releasably joined sections.

[0006] In some embodiments, the cylindrical pipe has a length of about half the user's height, for example, about 30 to 40 inches, or about 36 inches. In some embodiments, the cylindrical pipe has a diameter of about 0.5 inches.

[0007] In some embodiments, the closed elastic loop has an adjustable length, for example, about 9 to 12 feet.

[0008] In some embodiments, the attachment component comprises a Velcro strip with two closures. In some embodiments, the attachment component further comprises one or more flexible straps distributing resistance from the closed elastic loop along the user's foot.

[0009] Additional features and advantages of the present invention are described further below. This summary section is meant merely to illustrate certain features of the invention, and is not meant to limit the scope of the invention in any way. The failure to discuss a specific feature or embodiment of the invention, or the inclusion of one or more features in this summary section, should not be construed to limit the invention as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] The foregoing summary, as well as the following detailed description of the preferred embodiments of the application, will be better understood when read in conjunction with the appended drawings. For the purposes of illustrating the device of the present application, there are shown in the drawings preferred embodiments. It should be understood, however, that the application is not limited to the precise arrangements and instrumentalities shown. In the drawings:

[0011] FIG. 1 shows a portable exercise system according to some embodiments of the invention.

[0012] FIG. 2 shows a close up sectional view of the portable exercise system of FIG. 1.

[0013] FIG. 3 shows an exemplary attachment mechanism for securely attaching a resistance cord of the portable exercise system to the user's foot or ankle.

[0014] FIG. 4 shows the attachment mechanism of FIG. 3 fastened to the resistance cord, according to some embodiments.

[0015] FIG. 5 shows the attachment mechanism, according to some embodiments.

[0016] FIG. 6 shows the portable exercise system in an exemplary use by an individual, according to some embodiments.

DETAILED DESCRIPTION

[0017] The present invention is generally related to exercise systems and, more particularly, to portable exercise systems that strengthen the core and periphery of an individual independent of any external attachments.

[0018] In some embodiments, the portable personal exercise system of the present invention is a simple device with few parts, which can be relatively inexpensive to manufacture. It is configured such that it can be of beneficial use to a wide variety of individuals of different ages, sizes, movement abilities, and/or movement backgrounds. For example, the portable exercise system of the present invention may be especially advantageous for use, for example, by dancers and/or martial artists as it allows for multi-planar and multi joint movement possibilities. The portable exercise system may also be particularly advantageous for use, for example, by a rehabilitation community as it provides a structure and level of resistance appropriate to the individual.

[0019] Referring to FIG. 1, in some embodiments, the portable personal exercise system of the present invention is a device **100** comprising a cylindrical stick or pipe **110** and a continuous loop of resistance cord **120** threaded through the cylinder. In some embodiments, the closed loop **120** may be formed by securing two ends of a length of resistance cord together (e.g., with a knot, clamp, bond, etc.). As shown in FIG. 2, the loop of resistance cord **120** can slide freely through the cylinder **110**.

[0020] Cylinder **110** is preferably constructed of a light-weight material that provides rigidity to the device, but has some flexibility (e.g., a plastic). In some embodiments, for example, cylinder **110** comprises PVC (polyvinyl chloride) pipe. Cylinder **110** preferably has a length and/or diameter selected for comfort of use. In some embodiments, the length of cylinder **110** is based on the user's size (e.g., roughly about half the user's height). In various embodiments, cylinder **110** may range from about 30 to 40 inches in length. In some embodiments, cylinder **110** is about 36 inches in length. The diameter of cylinder **110** may also vary. The diameter of cylinder **110** is selected such that the cylinder can be comfortably gripped in a user's hand, and such that the loop **120** can move freely through it. In some embodiments, cylinder **110** has a 1/2 inch diameter. In some embodiments, cylinder **110** may be covered with a material that makes it softer, more comfortable, and/or more easy to grip. Various types of covers/grips may be used. In some embodiments, cylinder **110** may comprise two or more sections. The sections may be attached (e.g., screwed together) end to end for use, and folded or detached from one another (e.g., unscrewed, or

collapsed like tent poles) for travel and/or storage. Various types of attachments for the sections, and/or numbers of sections, may be used.

[0021] Closed loop **120** may be constructed of any type of elastic material that provides resistance during movement, including, but not limited to, latex and natural rubber. In some embodiments, the closed loop of resistance cord **120** comprises Thera-Band® exercise tubing. The resistance cord may vary in length, for example, according to the user's size/strength and/or the intensity of resistance desired. In some embodiments, the length of the resistance cord is about twice the height of the user. In some embodiments, the length of the resistance cord is about 9 to 12 feet. The level or intensity of resistance may be appropriately adjusted to an individual's strength by adjusting the length of the cord and/or the type of cord. Different resistance levels may be obtained, for example, by using different thicknesses of tubing.

[0022] In some embodiments, the closed loop **120** may be adapted and/or enabled to be attached to a user's foot or ankle via a secure attachment **200**. The secure attachment **200** provides a comfortable and easy way to secure the resistance cord to the foot or ankle FIG. 3 shows one exemplary secure attachment **200**. In alternative embodiments, secure attachment **200** may also include one or more additional straps for the foot, for example to wrap around the foot (toe, arch, and/or heel, etc.), like a partial/open shoe/slipper, to help disperse the resistance forces to the whole foot. The slipper straps are preferably made of a flexible material (elastic, leather, etc.) to allow full articulation of the foot. In some embodiments, attachment **200** comprises a Velcro strap having a center strip **210** and two end strips **220** and **230** for forming closures, as shown in FIG. 5. One of the end strips may be used to secure the loop **120**, as shown in FIG. 4. The other end strip may be used to attach to the ball of either foot, as shown in FIG. 3, or to the ankle When attachment **200** is a Velcro strap, the center strip may comprise Velcro loops and the two end strips Velcro hooks, or vice versa. Other methods of securely attaching the closed loop **120** to the user's foot or ankle may be used.

[0023] The portable exercise system can be held by the user at any position, in one or two hands. The resistance cord can slide freely through the cylinder, which allows the user to impose fluid resistance changes as they move and/or adjust their hold positions on the cylinder and/or the resistance cord. The combination of a free cord and a secure foot attachment allows the portable exercise system to be used in a fluid training session that challenges isometric, concentric, and eccentric strengthening and exercises full controlled range of motion. The loop of elastic tubing provides low-impact yet firm compression, activating postural trunk muscles. Seeing the plane formed can inform the user's placement and awareness of their body's alignment.

[0024] The portable personal exercise system of the present invention can be used in upright postures, allowing the user to move freely from foot to foot. The force produced as a result is self imposed and can be manipulated to challenge the user's core and peripheral strengthening, proprioception, and/or endurance. The secure attachment to the foot or ankle allows the user to execute exercises with greater degrees of freedom of movement, fluid weight shifts, and control of resistance applied through the foot in weight bearing gestures. The portable exercise system may also be utilized for floor or sitting exercises.

[0025] The portable personal device may be implemented as a training and strengthening device for injury prevention or

rehabilitation purposes. The device can be applied to various demographics, from the dance population to a pedestrian population, for its accessibility, versatility, and portability. Additionally, the portable personal device may be applied, for example, to a rehabilitative population specifically for its proprioceptive feedback and easily manipulated degree of resistance and direction of resistance.

[0026] The portable personal device is a strength training system that challenges the core, extremities, balance, and endurance of an individual. In some embodiments, the portable personal device may be enabled and/or adapted to allow an individual to attach the strap to the ball of his or her foot. In an exemplary exercise, as shown in FIG. 6, the cylindrical stick portion of the device is held by the user's hands on each end and the device is lifted. The user may then shift to a single leg stance, raising the strapped foot and creating a triangular plane with the device (as shown in FIG. 6), or standing on the strapped foot and raising the free foot into the loop, forming a four-sided plane. The device can be moved in single- or multi-planar patterns as the user balances on one leg.

[0027] In some embodiments, the cylindrical stick may be used as a guide to postural reintegration, challenging multiple muscular systems. The visual biofeedback aids in spatial awareness. The stick in a sense becomes a portable or movable gym. The user's body moves through an architecture it creates with endless variations in the force vectors as circular resistance revolves between feet, hands, and stick. The stick provides postural reference and an architectural orientation.

[0028] The portable exercise system can be held in various positions for no resistance or increasing levels of resistance. With more resistance, the proprioceptive input increases as compression acting through potentially hyper-mobile or even unstable joints stimulates the nerve endings.

[0029] The cylindrical stick can serve as a feedback tool that increases the ground reaction force with a functionality specific vector particular to the dancer's/mover's vocabulary.

[0030] In some embodiments, through the portable exercise system's attachment to the feet and hands, the cylindrical stick or pipe emphasizes the relationship between movements of the extremities and proximal stabilization. Biomechanics based on motor control principles are applied for the execution of injury prevention techniques.

[0031] In some embodiments, the portable personal exercise system may be employed for injury prevention exercises with a focus on shoulder/torso/pelvic relationships, disassociating rotation of the girdles, and/or a focus on training in upright postures.

[0032] As an example, a fifty five (55) minute movement session using the portable personal exercise system could be divided into two sections. The first section, forty (40) minutes, could be geared toward physical therapists, physicians, movement scientists, dance and Pilates teachers participating in a movement laboratory, resistance as tolerated. The second fifteen (15) minutes could be geared toward the ongoing participation of the higher level movers with the observations of the others.

[0033] Dancers, martial artists, and any movers that transfer weight from limb to limb, can strengthen in their own vocabulary. The more sedentary or repetitive mover population can benefit from strengthening and increasing awareness of the antigravity muscles. The benefit of the visual and tactile feedback of the cylindrical stick, with or without resistance, is applicable to any user.

[0034] In some embodiments, programs using the portable exercise system may be geared towards physical therapists working with dancers, Alexander teachers, Feldenkrais practitioners, movement specialists, physicians caring for dancers, and/or the teaching and research community.

[0035] In various embodiments, the personal portable exercise system facilitates exercises in training an individual's strength, awareness, and alignment control. In some embodiments, the exercises use dance vocabulary and motor control concepts. Through its attachments to the hands and the feet, the cylindrical stick or pipe of the portable exercise system can amplify the lines created by a dancer or other user as he/she moves through a series of exercises requiring disassociation of the glenohumeral joints, the shoulder girdle, and the torso while maintaining lumbo-pelvic neutral.

[0036] An exemplary exercise using the present invention, according to some embodiments, may begin with the cylindrical stick or pipe being aligned to certain boney landmarks for visual and tactile feedback. The hand-held contact closes the kinetic chain, giving weight bearing information to the glenohumeral and shoulder joints. Participants in this exercise routine can begin in a stance to enhance attention to spinal and postural alignment. A reference loop is created from the floor to the top of the head. The cylindrical stick or pipe, according to some embodiments, may be adopted as an extension of the self as a user may find himself/herself on a grid, relative to the sagittal, coronal, and transverse planes. Movement is introduced which accumulates from single joint straight planar to multi joint multi-planar disassociation exercises. Resistance bands are determined by an individual's body length, strength, and applied speed. The band increases the ground reaction force using a multitude of force vectors as the user moves through the choreography and/or dance session.

[0037] In some embodiments, the portable exercise system of the present invention may operate as an injury protection system that allows the user to feel more dramatically where their weaknesses are as they work to maintain the integrity of their alignment. The cylindrical stick or pipe may be adapted and/or enabled to function as a portable barre or portable system, at times like an environment to move and move through. In some embodiments, the portable exercise system challenges the user's postural antigravity strength and increases cognitive and proprioceptive awareness. Unlike existing systems or programs such as Pilates or Gyrotonic systems, the portable exercise system of the present invention allows users to be independent of fixed equipment and emphasizes strengthening while the user is standing up (or on their feet). The portable exercise system is also adaptive to many dance techniques, martial art forms, and sport styles. The cognitive awareness and strength that is developed (as a user focuses on boney alignment relative to the cylindrical stick or pipe and resistance cord) carries over when the user moves autonomously.

[0038] While there have been shown and described fundamental novel features of the invention as applied to the preferred and exemplary embodiments thereof, it will be understood that omissions and substitutions and changes in the form and details of the disclosed invention may be made by those skilled in the art without departing from the spirit of the invention. Moreover, as is readily apparent, numerous modifications and changes may readily occur to those skilled in the art. Hence, it is not desired to limit the invention to the exact construction and operation shown and described and, accordingly, all suitable modification equivalents may be resorted to falling within the scope of the invention as claimed. It is the intention, therefore, to be limited only as indicated by the scope of the claims appended hereto.

What is claimed is:

1. A portable personal exercise device comprising a cylindrical pipe and a closed elastic loop extending through the pipe, wherein the pipe is slideable along at least a portion of the closed loop.

2. The portable personal exercise device of claim 1, further comprising an attachment component for securably attaching the device to a user's foot or ankle.

3. The portable personal exercise device of claim 1, wherein the cylindrical pipe is plastic.

4. The portable personal exercise device of claim 1, further comprising a cover on the cylindrical pipe.

5. The portable personal exercise device of claim 1, wherein the cylindrical pipe has a length of about half of a user's height.

6. The portable personal exercise device of claim 1, wherein the cylindrical pipe has a length of about 30 to 40 inches.

7. The portable personal exercise device of claim 1, wherein the cylindrical pipe has a length of about 36 inches.

8. The portable personal exercise device of claim 1, wherein the cylindrical pipe comprises two or more releasably joined sections.

9. The portable personal exercise device of claim 1, wherein the cylindrical pipe has a diameter of about 0.5 inches.

10. The portable personal exercise device of claim 1, wherein the closed elastic loop comprises a latex resistance cord.

11. The portable personal exercise device of claim 1, wherein the closed elastic loop has an adjustable length.

12. The portable personal exercise device of claim 1, wherein the closed elastic loop has a length of about 9 to 12 feet.

13. The portable personal exercise device of claim 2, wherein the attachment component comprises a Velcro strip with two closures.

14. The portable personal exercise device of claim 2, wherein the attachment component further comprises one or more flexible straps distributing resistance from the closed elastic loop along the user's foot.

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