



US 20110250979A1

(19) **United States**
(12) **Patent Application Publication**
Dean

(10) **Pub. No.: US 2011/0250979 A1**
(43) **Pub. Date: Oct. 13, 2011**

(54) **GOLF SWING TRAINING AID**

(52) **U.S. Cl. 473/207**

(76) **Inventor: Casey Dean, Long Island, NY (US)**

(57) **ABSTRACT**

(21) **Appl. No.: 12/852,487**

(22) **Filed: Aug. 8, 2010**

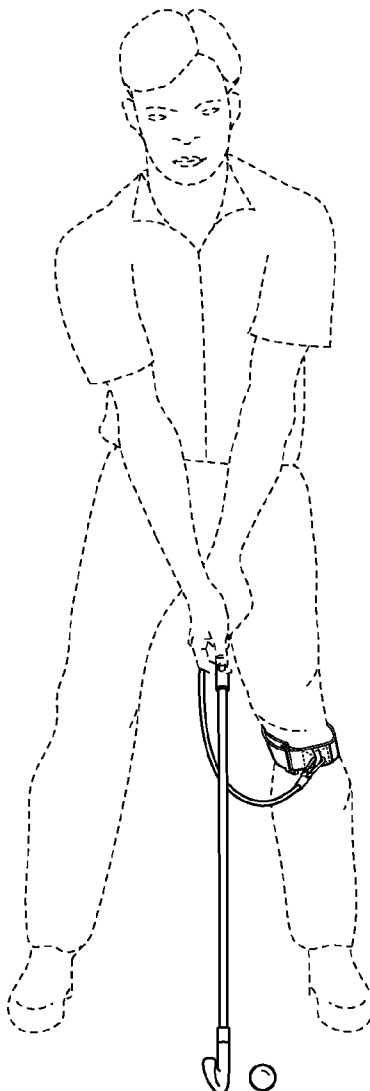
Methods and apparatus for a golf swing aid include a knee connector for connecting to a person's knee, a golf club connector for connecting to a golf club's grip that is gripped by the person, and a resilient connector for connecting the knee connector and the golf club connector. In an illustrative example, the resilient connector may be distendable to stretch under tension from an unstretched length to a stretched length to provide a force that opposes separation of the golf club connector and the knee connector beyond a predetermined distance based on the unstretched length of the resilient connector. In some examples, the golf swing training aid may provide a feel-based aid using feedback forces that may be a function of separation between the knee connector and the golf club connector during a dynamic movement of a swing to aid learning an improved golf swing.

Related U.S. Application Data

(60) Provisional application No. 61/232,149, filed on Aug. 7, 2009.

Publication Classification

(51) **Int. Cl.**
A63B 69/36 (2006.01)



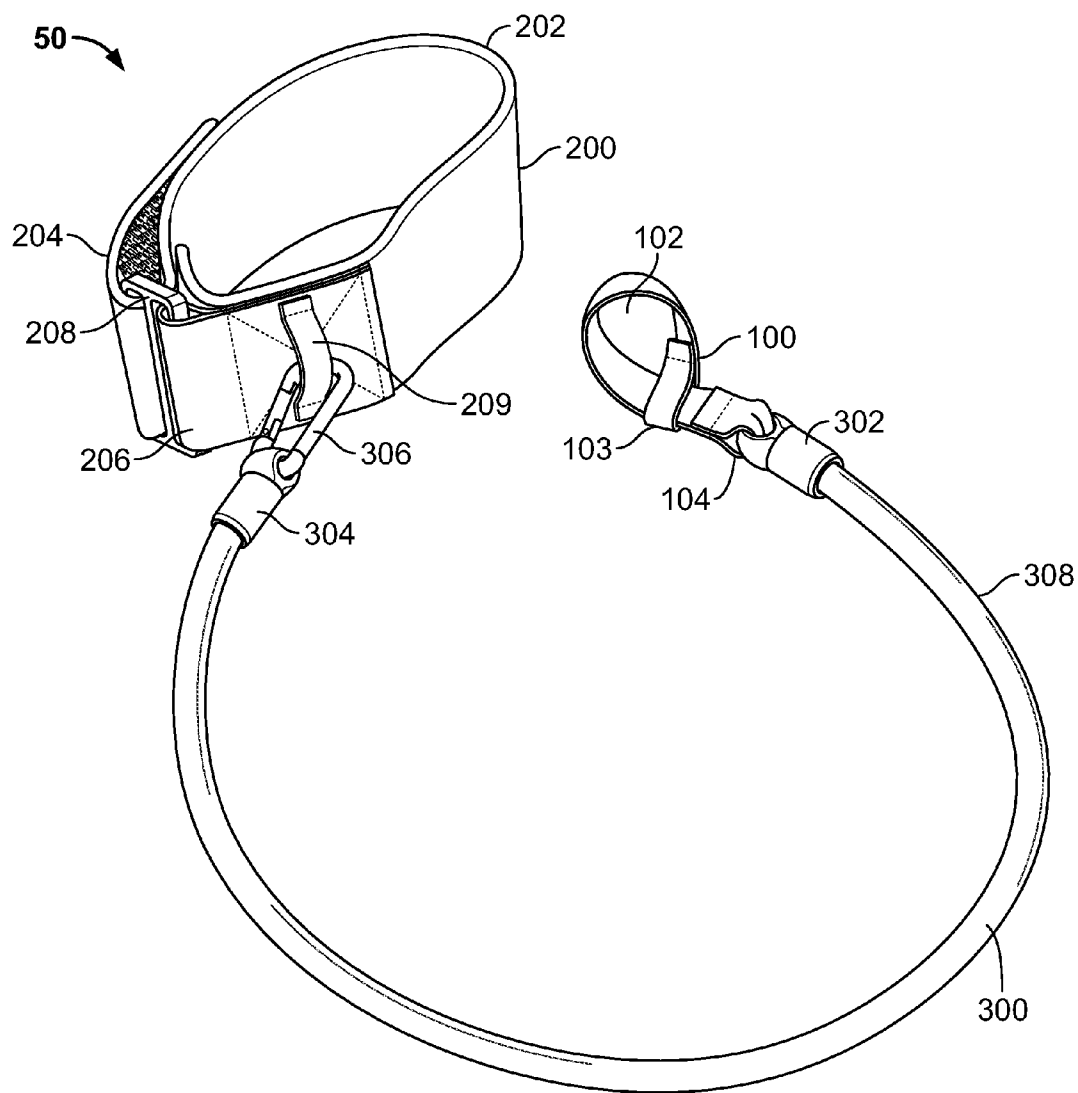


FIG. 1

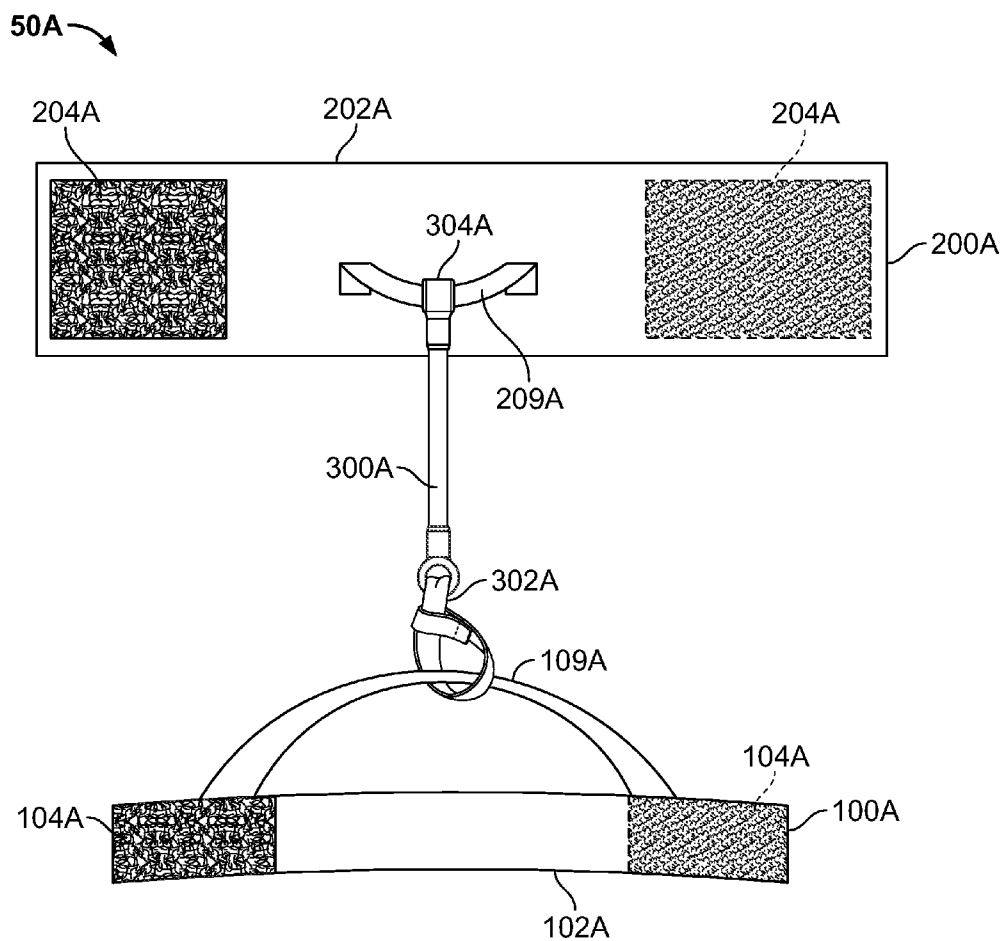


FIG. 2

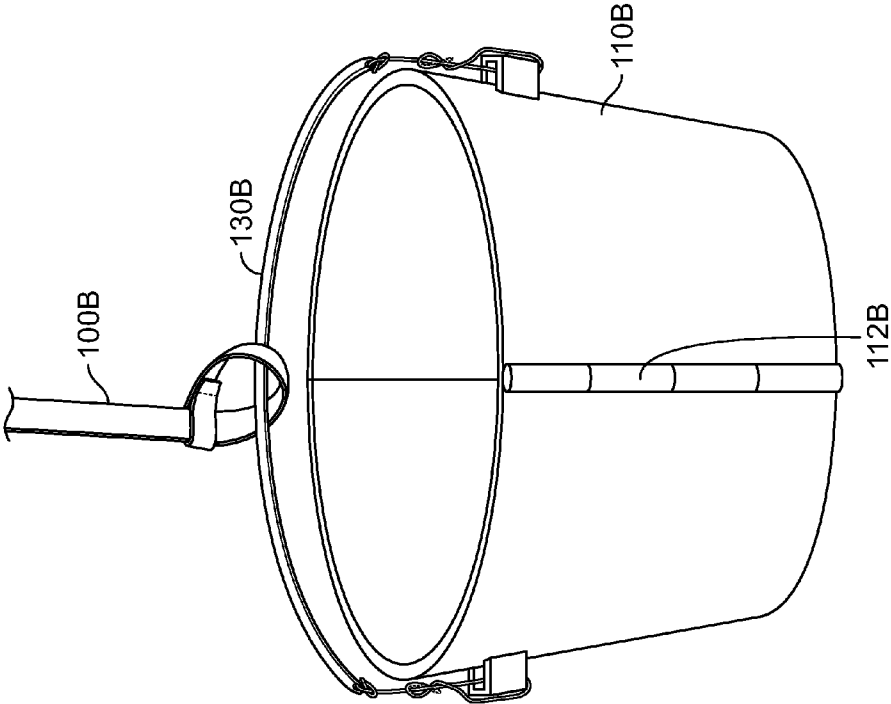


FIG. 3B

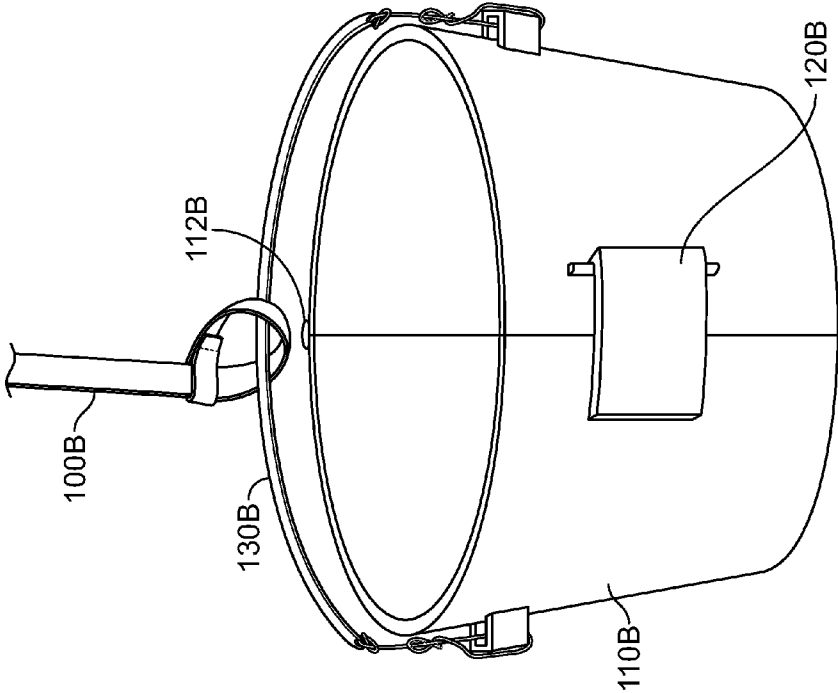


FIG. 3A

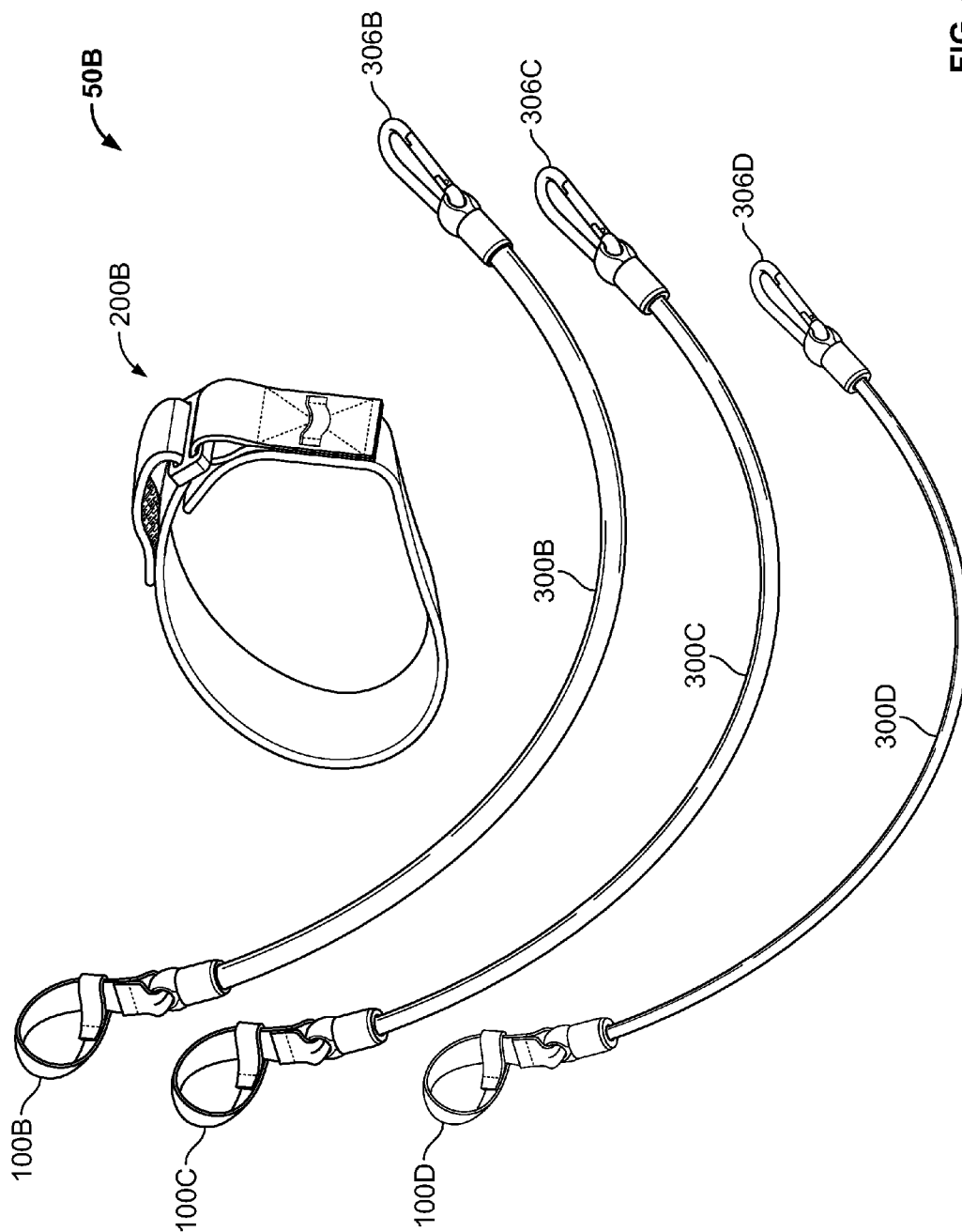


FIG. 4

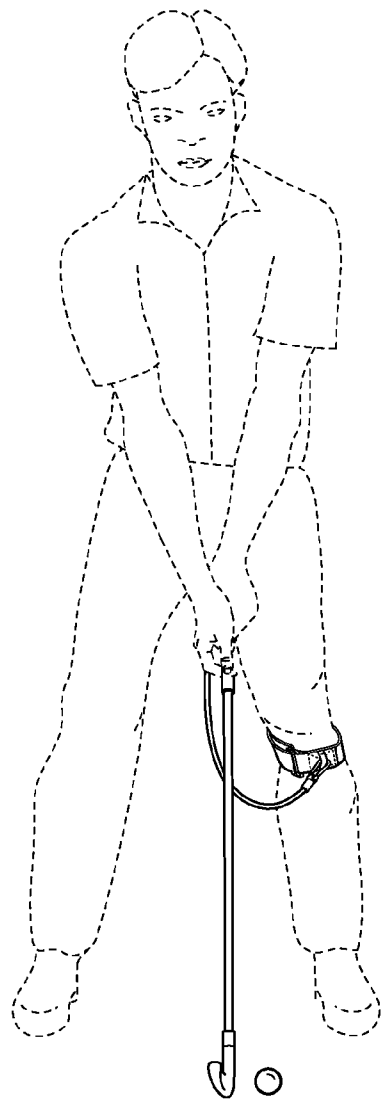


FIG. 5A

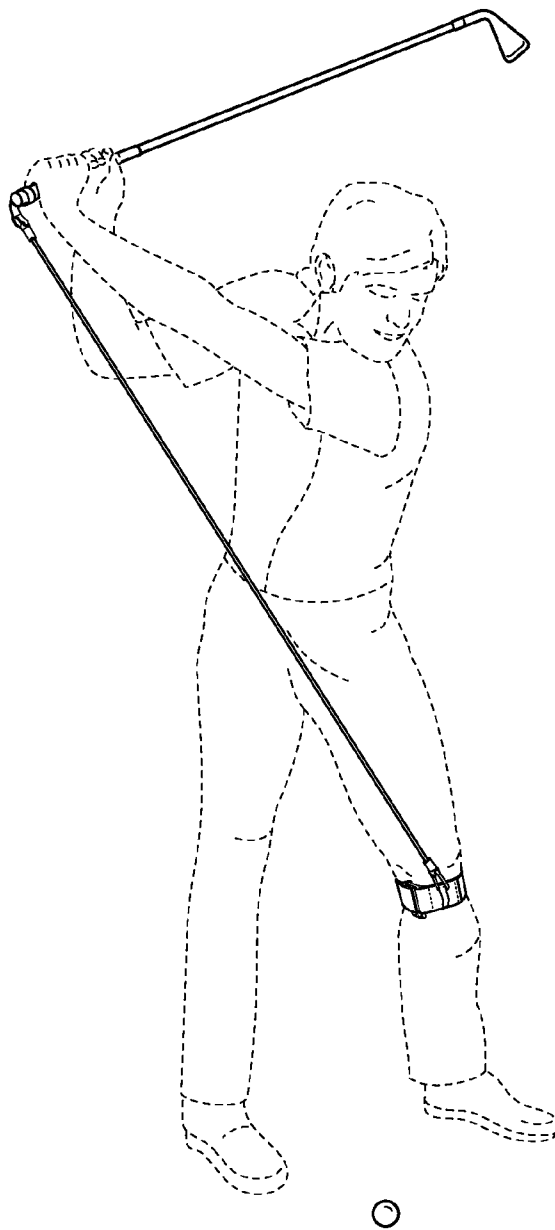


FIG. 5B

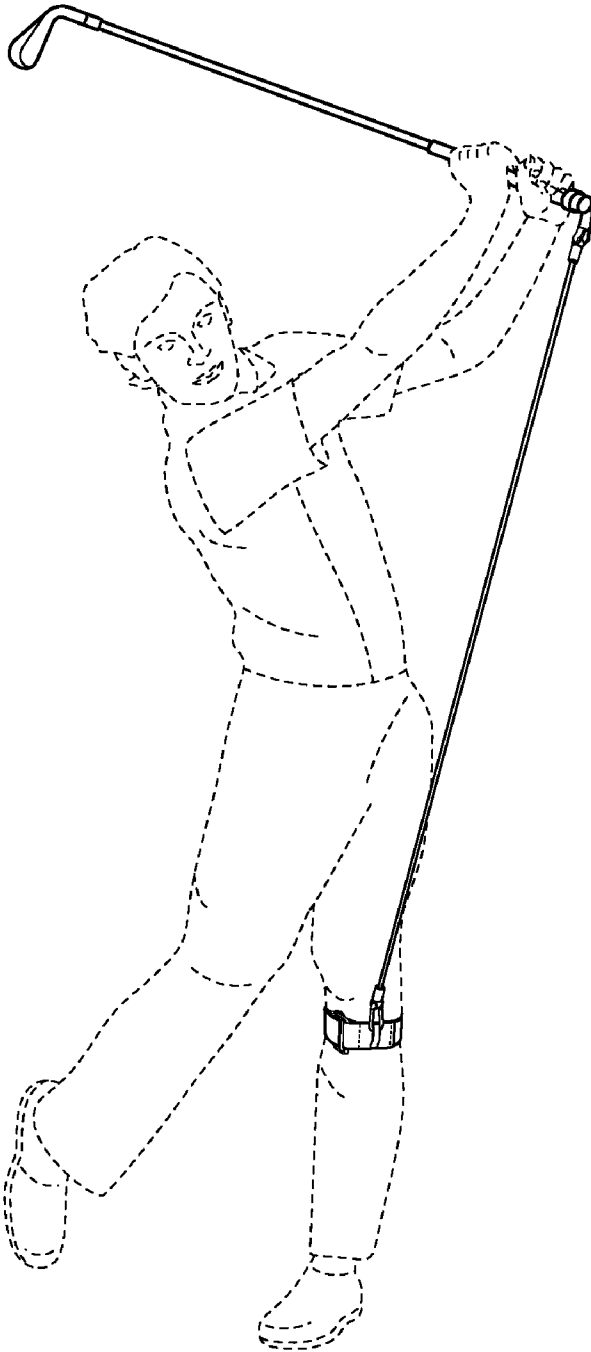


FIG. 5C

GOLF SWING TRAINING AID
CROSS-REFERENCE TO RELATED
APPLICATIONS

[0001] This application claims the benefit of U.S. Provisional Patent Application entitled "Golf Swing Training Aid," Ser. No. 61/232,149, which was filed by Casey Dean on Aug. 7, 2009, the entire contents of which are incorporated herein by reference.

TECHNICAL FIELD

[0002] Various embodiments relate generally to systems that teach the golf swing.

BACKGROUND

[0003] The golf swing is one of the factors that determine how well a golfer plays golf. An objective in golf is to get the ball in the hole in as few shots as possible. Hitting the golf ball with power and accuracy can help achieve this objective. A golfer hitting the golf ball with a fundamentally sound golf swing can ensure that the ball is hit with power and accuracy more consistently. In a fundamentally sound golf swing, the golfer's body and the golf club can be in positions at appropriate times or in the proper sequence during the golf swing to help the golfer hit the ball efficiently. When done properly, the golf swing can look fluid and natural.

[0004] Getting into fundamentally sound positions during the golf swing can often feel awkward and unnatural for the average golfer. The average golfer may proceed to swing in a way that is comfortable, and fundamentally less than ideal, and hit the ball poorly because of it. This can lead to frustration and bad scores, which can be avoided by improving the golf swing.

[0005] Golf instruction can be based on the golfer learning by feel. In this method, the golfer feels the proper way to swing the golf club rather than being told the proper body and golf club positions or what the proper swing should look like. In one approach, some instructors ask golfers to hold a position in their golf swing (such as the top of the backswing), then physically modify that position so the golfer can feel the difference between the fundamental sound modified position, and the previous fundamentally unsound position. This approach does not allow the golfer to hit the golf ball in one fluid motion. So, although the golfer gets the feeling of what the correct position is, the golfer does not necessary know what that position feels like during the fluid and constantly moving golf swing.

[0006] Timing is another aspect of the golf swing. Timing refers to matching up the lower body motion in the golf swing with the upper body motion. Some may believe that proper timing may occur when the upper body and lower body move in a complementary manner that is most efficient in producing power and accuracy. Improper timing during the transition of the golf swing can lead to a flawed golf swing. The transition of the golf swing may be considered the point during a swing when the club begins to change directions from the top of the backswing back towards the golf ball. When a golfer's timing is off during the transition, one of two things might happen: the golfer's upper body might initiate the transition, leading to the common "over-the-top" flaw, or the golfer's lower body might move too fast and dominate the upper body move, leading to another common flaw where the golfer is "stuck."

[0007] Physical fitness is also another component of swinging the golf club in a way that produces powerful and accurate shots. The golfer can hit the ball powerfully by applying sufficient physical strength and speed to swing the club fast and under control.

[0008] A golfer can experience any number of problems during the golf swing. A golfer can have a series of flaws during the golf swing or one flaw to leading to another.

SUMMARY

[0009] Methods and apparatus for a golf swing aid include a knee connector for connecting to a person's knee, a golf club connector for connecting to a golf club's grip that is gripped by the person, and a resilient connector for connecting the knee connector and the golf club connector. In an illustrative example, the resilient connector may be distendable to stretch under tension from an unstretched length to a stretched length to provide a force that opposes separation of the golf club connector and the knee connector beyond a predetermined distance based on the unstretched length of the resilient connector. In some examples, the golf swing training aid may provide a feel-based aid using feedback forces that may be a function of separation between the knee connector and the golf club connector during a dynamic movement of a swing to aid learning an improved golf swing.

[0010] The details of various embodiments are set forth in the accompanying drawings and the description below. Other features and advantages will be apparent from the description and drawings, and from the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. 1 shows a perspective view of components of an exemplary golf training aid system.

[0012] FIG. 2 shows a perspective view of another example of a golf training aid system.

[0013] FIGS. 3A and 3B show perspective views of another example of a golf club connector.

[0014] FIG. 4 shows a perspective view of components of an exemplary kit for a golf swing training aid system.

[0015] FIGS. 5A-C show the golf swing aid at work with the golf club connector, knee connector, and resilient connector at different positions and resilient connector at different lengths in different phases of the golf stroke, which includes a back swing, down swing, and follow-through for a normal stroke.

[0016] Like reference symbols in the various drawings indicate like elements.

DETAILED DESCRIPTION OF ILLUSTRATIVE
EMBODIMENTS

[0017] In various embodiments, a training aid may be a feel based golf swing aid. When used while hitting golf balls, the training aid gives the golfer a number of sensations that encourage a fundamentally sound golf swing. These sensations and the problems they help fix are discussed herein. In various examples, a training aid may help correct various flaws by encouraging the golfer to feel the proper golf swing during the fast, complicated, and dynamic motion of the golf swing, which can feel unnatural and awkward without such an aid.

[0018] FIG. 1 shows a perspective view of components of an exemplary golf training aid system. The training aid 50 includes a golf club connector 100, knee connector 200, and

resilient connector **300**. The resilient connector may connect with the golf club connector at one end and the knee connector at the opposite end. In some implementations, the golf club connector **100**, the knee connector **200**, and the resilient connector **300** may be generally referred to as a golf club shaft coupling member, knee joint coupling member, and linkage member, respectively.

[0019] The golf club connector **100** may connect with a golf club grip. The knee connector **200** may connect to the golfer's leading knee. The leading knee is the left knee for golfers swinging right handed and the right knee for golfers swinging left handed. In the depicted example, the golf club connector **100** and the knee connector **200** are removably attached to or detachable from the golf club or knee joint, respectively.

[0020] In the depicted FIG. 1, the golf club connector **100** includes a golf club connector loop **102** that secures around a golf club grip and a resilient connector loop **104** that is secured around the hook at one end of the resilient connector. The formation of the loop **102** is similar to the formation of a slip knot or hitch knot. The golf club connector loop **102** is formed by passing a working end over itself and attaching the free end of the working end to itself to form a sliding loop **103**. The sliding loop **103** is configured to slide along the golf club connector loop **102** to adjust the size of the golf club connector loop **102** to the circumference of the golf club grip. The golf club connector **100** is adapted to be configured for attachment to a variety of differently sized golf clubs with differently sized golf club grips. In some examples, the sliding loop **103** and the resilient connector loop **104** may be formed by sewing their working ends to themselves. The golf club connector **100** may be made of coarse or textured fabric that cooperates with the material and shape of the golf club grip so the golf club connector loop **102** is securely fastened around the golf club grip.

[0021] In the depicted FIG. 1, the knee connector **200** forms a cuff that is secured around the knee joint. The knee connector **200** includes a body portion **202**, a fastening device **204**, and a connection portion **206**. The body portion **202** may be an elastic sheet of material formed, for example, from an elastic material such as neoprene. The connection portion **206** connects the knee connector **200** with the resilient connector **300**. The connection portion **206** of the depicted example uses a sheet of material looped around a plastic clip **208** and includes a loop **209** to which the resilient connector **300** is connected. The sheet of material may be made of fabric, for example. The loop **209** may generally be referred to as a connection element.

[0022] When the knee connector **200** is not wrapped around the knee joint, the fastening device **204** may be at one end of the body portion **202** and a connection portion **206** at the opposite end of the body portion. The fastening device **204** is located on the outer surface of the elastic sheet of material **202** that does not contact the knee when the knee connector is wrapped around the knee joint. The fastening device **204** may be two cooperating members of the hooks and loops fastener, such as VELCRO®. The hook portion of the hook and loop fastener may be located at the end of the body portion **202**, spanning three inches along the length of the body portion **202**. The loop portion of the hook and loop fastener may be located in the intermediate portion of the body portion **202**, spanning a substantial if not the entire portion of the body portion **202** until the body portion **202** joins with the connec-

tion portion **206**. The hook and loop portions of the hook and loop fastener may be on the same surface of the body portion as the loop **209**.

[0023] When the knee connector is wrapped around the knee joint, the end of the body portion **202** with the fastening device **204**, such as a hook and loop fastener, may be looped through the plastic clip **208**, such that the hook portion engages with the loop portion of the hook and loop fastener. The size of the cuff around the knee joint may be adjusted by looping a greater length of the body portion **202** through the plastic clip for smaller knees and looping a smaller length of the body portion **202** through the plastic clip for larger knees. The connection portion **206** includes a loop **209** at which a clip of the resilient connector may be connected. The loop **209** is located on the intermediate portion of the connection portion **206** and on the outer surface of the connection portion **206**, such that the loop **209** does not contact the knee when the knee connector is secured around the knee. The loop **209** may be made of fabric. The fastener is also on the outer surface of the knee connector such that it does not contact the knee when the knee connector is secured around the knee.

[0024] The resilient connector **300** connects the golf club with the golfer's knee. The resilient connector can connect with the grip end of the golf club by connecting with the golf club connector **100** and the golfer's leading knee by connecting with the knee connector **200**. The resilient connector **300** is distendable to stretch under tension from an unstretched length to a stretched length to provide a force that opposes separation of the golf club grip coupling member and the knee joint coupling member beyond a predetermined distance based on the unstretched length of the resilient connector **300**. When a golfer makes a swing using the golf swing training aid, the golfer's reaction to the pull of the resilient connector **300** tends to force the golfer into a better position for making the golf swing.

[0025] The resilient connector **300** may be stretchable or have the ability to stretch. In embodiments the resilient connector **300** may be extendable, enlarge by tension, or distend. During the golf swing, the grip end moves away from the leading knee as the golfer reaches the top of his backswing. Then, the grip end moves closer to the leading knee as the golfer approaches impact. After impact, the grip end moves away from the leading knee as the golfer finishes his swing. The resilient connector **300** can stretch to different lengths for different phases of the golf swing. For example, the resilient connector can dynamically stretch enough to allow a golfer to make a complete golf swing.

[0026] The resilient connector may be resilient, which is also described as elastic, springy, or flexible. Resiliency is typically characterized as including the ability to return substantially to the original form, length, or position after being bent, compressed, or stretched. As the resilient connector **300** is stretched by moving the golf club connector and the knee connector away from each other, it may return to substantially its original length. This can provide sufficient freedom to the golfer in making his golf swing without the resilient connector providing any significant force against the golf club other than the resilient force of the connector **300** under tension to return to its original length.

[0027] The resilient connector **300** may be flexible, which is also described as pliable, elastic, or capable of being flexed or bent. Flexibility may generally be characterized as being easily or capable of being bent usually without breaking. Some embodiments may use a flexible resilient connector,

which may reduce or substantially prevent the resilient connector from breaking when the resilient connector is manipulated to different lengths and/or shapes during different phases of the golf swing.

[0028] In the depicted FIG. 1, the resilient connector 300 includes a band 308 with attachment ends 302, 304 at which clip 306 can be attached to a loop 209 of the knee connector 200 at one end and a loop 104 for attaching the golf club connector 100 at the other end. The clip 306 may be made of metal, in some examples. The attachment ends 302, 304 and band 308 may be made of an elastic, resilient material, such as latex or rubber, for example. The band 308 may be a tubular shape in some examples. As an illustrative example, and without limitation, the resilient connector 300 may have an unstretched length of about 2 feet and an effective length when stretched of up to about 2.25, 2.5, 2.75, 3, 3.25, 3.5, 3.75, or about 4 feet during operation.

[0029] FIG. 2 shows a perspective view of another example of a golf training aid system. The golf training aid system 50A includes resilient connector 300A connected with the knee connector 200A and golf club connector 100A at loops 209A, 109A, respectively.

[0030] In the depicted FIG. 2, the golf club connector 100A includes a body portion 102A and a fastening device 104A for securing around the knee joint. The body portion 102A is a piece of material configured to surround or wrap around the golf club. The piece of material may be made from an elastic material or fabric. A loop 109A is connected to opposite ends of the body portion 102A. The loop 109A may be sewn to the body portion 102A. The resilient connector 300A is connected to the golf club connector 100A at loop 109A. The loop 109A may be made of fabric in some embodiments.

[0031] In the depicted FIG. 2, the fastening device 104A includes two cooperating members, each of which are positioned at or near the opposing ends of the body portion and cooperate to fasten the golf club connector 100A around the golf club. The cooperating members of the fastening device 104A may be sewn onto the body portion 102A. The fastening device 104A may be cooperating members of a hook and loop fastener in which the hooks portion of the hook and loop fastener are positioned at one end of the body portion 102A and the loops portion of the hook and loop fastener are positioned at the opposite end of the body portion 102A. To cooperate, the hooks portion and the loops portion are positioned on the reverse sides of the fabric.

[0032] In the depicted FIG. 2, the knee connector 200A includes a body portion 202A and a fastening device 204A for securing around the knee joint. The body portion 202A is a piece of material configured to surround or wrap around the knee joint. The piece of material may be made from an elastic material or fabric. A loop 209A is connected to the intermediate portion of the body portion 202A. The loop 209A may be sewn to the body portion 202A. The resilient connector 300A is connected to the knee connector 200A at loop 209A. The loop 209A may be made of fabric.

[0033] In the depicted FIG. 2, the fastening device 204A includes two cooperating members, each of which are positioned at or near the opposing ends of the body portion and cooperate to fasten the knee connector around the knee joint. The cooperating members of the fastening device 204A may be sewn onto the body portion 202A. The fastening device 204A may be cooperating members of a hook and loop fastener in which the hooks portion of the hook and loop fastener are positioned at one end of the body portion 202A and the

loops portion of the hook and loop fastener are positioned at the opposite end of the body portion 202A. To cooperate, the hooks portion and the loops portion are positioned on the reverse sides of the fabric.

[0034] In the depicted FIG. 2, the exemplary resilient connector 300A is a band with looped ends 302A and 304A for connecting with opposing ends coupled to the loop 109A of the golf club connector 100A and loop 209A of the knee connector, respectively. One or both loops 302A, 304A may be permanently attached to loops 109A and 209A. In some implementations, one or both loops may be removably attached to or detachable from the loops 109A and 209A.

[0035] FIGS. 3A and 3B show perspective views of another example of a golf club connector. The golf club connector 100B comprises a body portion 110B, a fastening device 120B, and a connection element 130B. The body portion 110B comprises a hinge 112B and a seam 114B that cooperate to open and close the golf club connector about the golf club grip. When the golf club connector is connected with the golf club grip, the body portion takes form as a substantially frusto-conical structure. In other embodiments, the golf club connector forms a cylindrical or conical shape when connected to the golf club grip. The body portion 110B comprises connection elements 130B, which comprise openings through which a cord may be attached to form a loop for attaching the resilient connector 300. In some embodiments, the openings can be provided by a structure connected to the body portion. In other embodiments, one or more openings can be provided into the wall of the body portion for attachment of the resilient connector or the cord to form the loop by which the resilient connector is attached. The fastening device 120B can be a latch mechanism to secure the golf club connector onto the grip of the golf club.

[0036] A variety of manufacturing methods can be used to make each of the components of the golf training aid separately or integrally in varying combinations of the components. The knee connector, golf club connector, and resilient connector can be sold separately or together as a package in varying combinations as a kit. A golf club can accompany the package.

[0037] FIG. 4 shows a perspective view of components of an exemplary kit for a golf swing training aid system. In the depicted FIG. 4, the golf swing training aid kit 50B includes a knee connector 200B, three different resistance connectors 300B, 300C, and 300D of different resistance level each with a golf club connector 100B, 100C, and 100D on one end and a clip 306B, 306C, and 306D on the other end. The clip connects the knee connector. The clip may be made of metal. The golf club connector may be pre-attached to the resilient connector. Each of the resistance connectors may have different resistance levels by varying the thickness of the tube walls while keeping the length of each resistance connector the same.

[0038] In some embodiments, the golf club connector is permanently attached to the golf club. Instructions can be sold in the kit with the components. In some embodiments, an instructional DVD can be sold in the kit that explains how to use the training aid. The instructional DVD can provide a few practice drills.

[0039] The golfer can use the training aid by connecting the golf club connector to the grip of the selected club and the knee connector to his leading knee. The golfer can then proceed to hit golf balls as he would normally hit them when he is not wearing the training aid.

[0040] FIGS. 5A-C show the golf swing aid at work with the golf club connector, knee connector, and resilient connector at different positions and resilient connector at different lengths in different phases of the golf stroke, which includes a back swing, down swing, and follow-through for a normal stroke. In the depicted FIG. 5A, a golfer positions a golf club near a golf ball. In the depicted FIG. 5B, the golfer moves the club away from the ball in a back swing. From the backswing, the golfer makes the down swing back to middle and completes the follow-through for a normal stroke as shown in FIG. 5C.

[0041] The resilient connector may start to stretch shortly after the golfer initiates the backswing. Then tension in the resilient connector may increase as the resilient connector is stretched longer. Tension in the resilient connector may grow as the golfer continues the backswing. Tension can reach its maximum as the golfer gets to the top of his backswing. The grip end of the club is the furthest from the leading knee during the backswing when the golfer is at the top of the backswing. This applies to a golfer with a fundamentally correct golf swing. This is not necessarily true for a golfer with an incorrect golf swing.

[0042] Tension in the resilient connector can decrease as the golfer approaches impact with the golf ball and the grip end moves closer to the leading knee. Tension can increase again after the golfer impacts the golf ball and the grip end of the club begins to move away from the leading knee. The tension in the resilient connector can create a pulling force throughout the golf swing that is not present without the training aid. This pulling force can help correct many of the typical problems in the golf swing through various means as described below, and these may include problems backswing, timing, lag, follow through swing, and strength. The training aid is not limited to the benefits mentioned herein. They just serve as examples of some of the benefits.

[0043] A swing flaw among some golfers is a tendency to have a narrow backswing. A narrow backswing happens when the golfer does not extend his arms away from his body during his backswing. Instead, his arms and hands remain close to his body all the way to the top of his backswing. At this point, the right-handed golfer's left arm is significantly bent and in a weak position to hit the ball. A narrow backswing may lead to a weak and inaccurate golf swing. In various embodiments, the training aid described herein may help fix the problem of the narrow backswing because as the golfer swings the club back, the resilient connector pulls the grip end of the golf club toward the leading knee. If the golfer does not provide a counter force against the resilient connector by extending his arms and the grip end of the golf club away from his leading knee, his narrow backswing problem will be exaggerated. Because of this, the golfer naturally provides the counter force against the resilient connector to avoid the exaggerated narrow backswing. The feeling the golfer gets while doing this is exactly the feeling he needs to have to correct his narrow backswing problem. The golfer can then practice and learn the feeling of providing force against the resilient connector by practicing with the training aid. After the feeling is engrained and he removes the training aid, the golfer may continue to provide the learned counter force to fix the narrow backswing problem. Providing this counter force can lead to arm extension and a wider backswing. That is how the training aid helps fix the narrow golf swing problem.

[0044] Timing is an important aspect of the golf swing. As used herein, timing may generally relate to the sequence of movements in the golf swing. In the transition phase of the golf swing, the club begins to move from the top of the backswing back towards the golf ball. The leading knee should initiate the transition. It should slide toward the target, creating a slight weight shift toward the target. After this, the upper body should follow suit, and begin rotating back towards the golf ball.

[0045] Coming "over the top" and "getting stuck" are common problems that stem from the transition phase of the golf swing. Coming over the top occurs when the upper body initiates the transition, whereas getting stuck occurs when the lower body dominates and gets too far ahead of the upper body during the transition. The training aid helps fix both these problems.

[0046] Coming over the top is a more common problem for the novice golfer than getting stuck. Wearing the training aid can help fix this problem by drawing the golfer's attention to what the proper transition feels like. While wearing the training aid, as the golfer reaches the top of his backswing, the tension on the resilient connector builds. This leads to the knee connector pulling the leading knee away from the target. This pulling force serves as a reminder throughout the backswing for the golfer to initiate the transition with the leading knee, instead of with the upper body as he was previously. This new, lower body initiated transition, will create more tension in the resilient connector than the previous over the top transition. The golfer then continues to practice with the training aid, engraining the feel of the proper transition, until it becomes second nature.

[0047] Getting stuck is a more common problem for the advanced golfer. Like coming over the top, the training aid can help fix getting stuck by drawing the golfer's attention to the transition. Specifically, a golfer that is getting stuck will feel tension in the resilient connector for longer than ideal. This is because his overactive lower body is moving the leading knee away from the grip end of the golf club while the passive upper body is not moving the grip end of the golf club toward the leading knee fast enough. To fix the getting stuck problem, the golfer will want to feel as if he is releasing tension in the resilient connector sooner by transitioning more with his upper body. The training aid can help him transition more with his upper body by serving as a reminder to release the tension in the resilient connector sooner. Practicing with an embodiment of the training aid may advantageously engrain this new transition.

[0048] The training aid may also, in some embodiments, help golfers increase power by increasing lag in the golf swing. Lag refers to the angle between the golf club shaft and the leading arm during the downswing. The smaller the angle, the greater the lag will be. Lag can be primarily determined by how much the golfer hinges the club with his wrists. In general, lag may increase distance because lag acts like a whip. If a golfer has a large amount of lag, the club head of the golf club must travel a greater distance in a shorter period of time before it hits the ball, which is similar to a whipping motion. This may produce increased speed and increased distance.

[0049] The training aid can promote lag in the golf swing a number of different ways. First, if the golfer was previously coming over top, he likely had very little lag in his golf swing. By helping the golfer to fix the over the top motion, the training aid also increases the golfer's lag and distance. Second, if the golfer chokes up on the golf club slightly while

using the training aid, he will feel increased tension in the resilient connector by having more lag on the down swing. This is because the greater the lag, the further away the end of the golf club is from the leading knee, and therefore the greater the tension.

[0050] Increased tension may serve as a reminder during the golf swing to maintain wrist hinge to increase lag. As the golfer practices with the training aid, this motion becomes second nature and becomes easily incorporated into golf swings made without the training aid.

[0051] The follow through is another trouble area for some golfers. Novice golfers have the tendency to hit at the ball instead of through it. This leads to decreased distance and accuracy. The training aid can help fix this problem. After the golf club makes contact with the golf ball during the golf swing, the grip end of the club moves away from the leading knee. As this happens, the tension in the resilient connector increases. This tension serves as a reminder for the golfer to follow through the golf shot and extend his arms through the finish. This leads to increased distance and accuracy. As the golfer practices with the training aid, the new follow through will become engrained in his golf swing both with and without the training aid. The training aid also helps golfers increase distance and accuracy by increasing the strength of the muscles used in the golf swing.

[0052] As described above, the training aid provides force against the golfer's momentum in various points throughout the golf swing. This means the golfer must learn to swing against the increased force, leading to increased strength after repeated use. Although various embodiments have been described with reference to the figures, other embodiments are possible.

[0053] For example, the body portion of the golf club connector may comprise one, two, or more connection elements for connecting the resilient connector to the golf club connector. The connection elements may be a loop formed by attaching the ends of a cord to the body portion of the golf club for attaching the resilient connector to the golf club connector. The body portion of the golf club connector may include openings or structures with openings for attaching the ends of the cord or other sheet of material to form the loop. In some implementations the ends of the cord or sheet of material may be knotted around the opening to form the loop.

[0054] In some examples, the body portion of the golf club connector may be in a variety of shapes, such as forming a frusto-conical shape when connected to the golf club. The body portion of the golf club connector may be made from a variety of rigid or pliable materials such as fabric, polymer, metal, or combinations thereof. Suitable polymers can comprise neoprenes, polypropylenes, polycarbonates, nylons, acetals, or combinations thereof. In some examples, the fastening device of the golf club connector may be a latch mechanism; stems with interlocking mushroom shaped tops fastener, such as 3M™ DUAL LOCK™ reclosable fastener, snap fit, clamp, buckle mechanisms, or the like.

[0055] In some examples, the golf club connector may be permanently attached to the golf club. In some embodiments, the golf club connector may be connected to different locations of the golf club. The golf club connector may be connected to the variety of golf clubs and golf club grips that are available. The golf club connector may be made from rigid or pliable materials.

[0056] In some examples, the body portion of the knee connector can be in a variety of shapes, such as forming a

frusto-conical shape when connected to the golf club. The knee connector can be made from pliable materials. Pliable is characterized as easily bent, flexible, or supple. The body portion of the knee connector may be made from a variety of pliable materials such as fabric, polymer, metal, or combinations thereof. Polymers can comprise neoprenes, polypropylenes, polycarbonates, nylons, acetals, elastic materials, or combinations thereof. Fabric materials can have some degree of elasticity. Elastic may be characterized as capable of returning to its original length, shape, etc., after being stretched, deformed, compressed, or expanded.

[0057] In some examples, the fastening device of the golf club connector may be a latch mechanism; stems with interlocking mushroom shaped tops fastener, such as 3M™ DUAL LOCK™ reclosable fastener, snap fit, clamp, buckle mechanisms, or the like.

[0058] For example, the body portion of the knee connector may comprise one, two, or more connection elements for connecting the resilient connector to the golf club connector. The connection elements may be a loop formed by attaching the ends of a cord to the body portion of the knee joint for attaching the resilient connector to the knee connector. The body portion of the knee connector may include openings or structures with openings for attaching the ends of the cord or other sheet of material to form the loop. In some implementations the ends of the cord or sheet of material may be knotted around the opening to form the loop.

[0059] The resilient connector connects the golf club with the golfer's knee. The resilient connector can connect with the grip end of the golf club by connecting with the golf club connector and the golfer's leading knee by connecting with the knee connector. The resilient connector can be adjustable to provide different levels of resistance for golfers of different physical characteristics, such as height and weight, and different abilities, such as strength and skill. For example, the resilient connector can be shortened to increase the level of resistance to deformation and stretching. The resilient connector can be detachable from the golf club connector and knee connector so the golfer can change the resilient connector to obtain a different level of resistance. For example, as the golfer becomes more advanced, the golfer can increase the resistance level by changing to a shorter resilient connector or a resilient connector with different material properties, or both.

[0060] The resilient connector can come as different lengths to provide different levels of resistances. A single resilient connector can be adjustable to different lengths or differently sized resilient connectors can be provided. In some embodiments, a resilient connector can be provided with one or more fabric extensions that is connectable with either or both the knee connector and golf club connector. The fabric extensions can be provided with a slidable buckle to adjust the fabric extension to the desired length. For example, the buckle can be adjusted so that the fabric extension doubles over to reduce the length of the resilient connector.

[0061] In exemplary embodiments, the resilient connector can be a band, tether, or the like. The resilient connector can be made of different materials with precise elasticity. These materials can comprise rubber or latex tubes, for example, exercise tubing, rubber surgical tubing, therapeutic or resistance training sports bands, elastic cords, such as bungee cords, and the like.

[0062] A number of implementations have been described. Nevertheless, it will be understood that various modifications

may be made. For example, advantageous results may be achieved if the steps of the disclosed techniques were performed in a different sequence, or if components of the disclosed systems were combined in a different manner, or if the components were supplemented with other components. Accordingly, other implementations are contemplated within the scope of the following claims.

What is claimed is:

1. A golf swing training aid for teaching and improving a golf swing to contact a golf ball, the golf swing training aid comprising:

- a golf club grip coupling member arranged to be releasably attachable to a golf club grip;
- a knee joint coupling member that fastens to a knee joint; and
- a linkage member that connects with the golf club grip coupling member at one end and the knee joint coupling member at the opposite end,

wherein the linkage member is distendable to stretch under tension from an unstretched length to a stretched length to provide a force that opposes separation of the golf club grip coupling member and the knee joint coupling member beyond a predetermined distance based on the unstretched length of the linkage member.

2. The golf swing training aid of claim 1 wherein the force provided by the linkage member comprises resistance.

3. The golf swing training aid of claim 1 wherein the linkage member comprises rubber.

4. A method of using a golf swing training aid, the method comprising:

swinging a golf club to contact a golf ball in response to a force provided by a linkage member that connects with a golf club grip coupling member fastened to a golf club grip and a knee joint coupling member fastened to a leading knee,

wherein the linkage member provides the force when stretched under tension from an unstretched state to a stretched state while swinging of the golf club, and

wherein the force provided by the linkage member opposes separation of the golf club grip coupling member and the knee joint coupling member beyond a predetermined distance in excess of a length of the linkage member in the unstretched state.

5. The method of claim 4, wherein the response comprises extending the grip away from the leading knee to prevent a narrow backswing.

6. The method of claim 4, wherein the force provided by the resilient connector in a backswing pulls the leading knee away from a golf ball.

7. The method of claim 4, wherein the response comprises moving the leading knee during the transition between the backswing and the downswing.

8. The method of claim 4, wherein the response comprises maintaining wrist hinge during the downswing.

9. The method of claim 4, wherein the response comprises extending the arms while completing the follow through swing.

* * * * *