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(54) **TRAINING DEVICE**

(57) **ABSTRACT**

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The present invention relates to training device for providing feedback as to hand position and trajectory of an implement swung in a stick sport as well as methods of improving muscle memory for participants in stick sports. The training device consists of a sports implement in the form of a bat, stick, club, mallet, wicket, etc. wherein one or more indicators are affixed at a predefined radius to the longitudinal plane of the training device. Alternatively, the invention consists of a training device attachable to a sports implement, such as a bat, stick, club, mallet, wicket, etc., comprising one or more indicators which will assume an adjustable position radial to the longitudinal plane of the stick implement. Further, the invention consists of a training device also comprising one or more indicators which is wearable on the arm or leg of a participant, either via an elastic band or a Velcro® strap. Methods of improving muscle memory and/or sports technique using the training devices described herein are contemplated, as well.

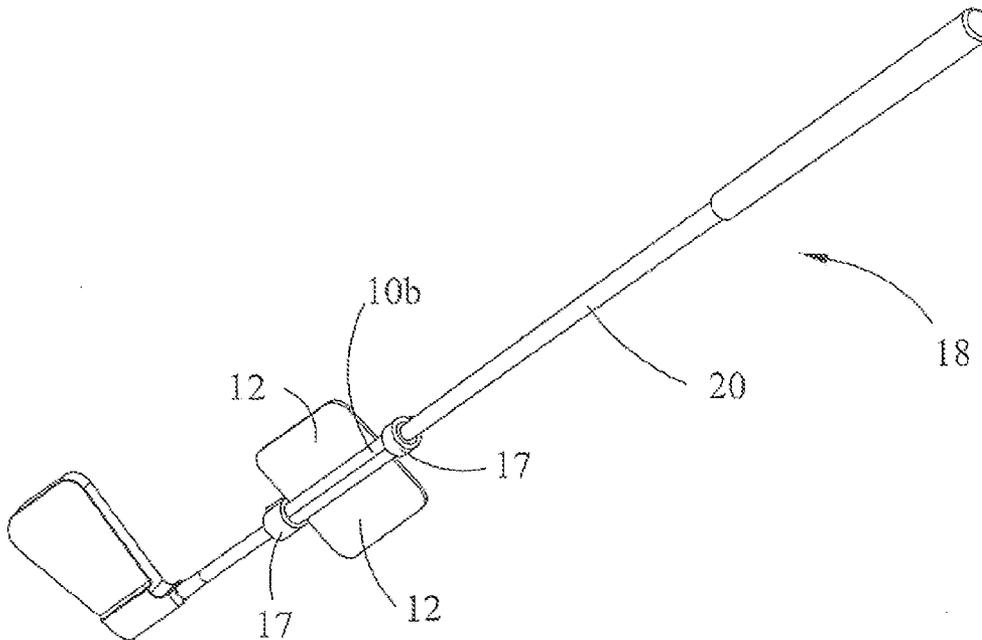


Fig. 1

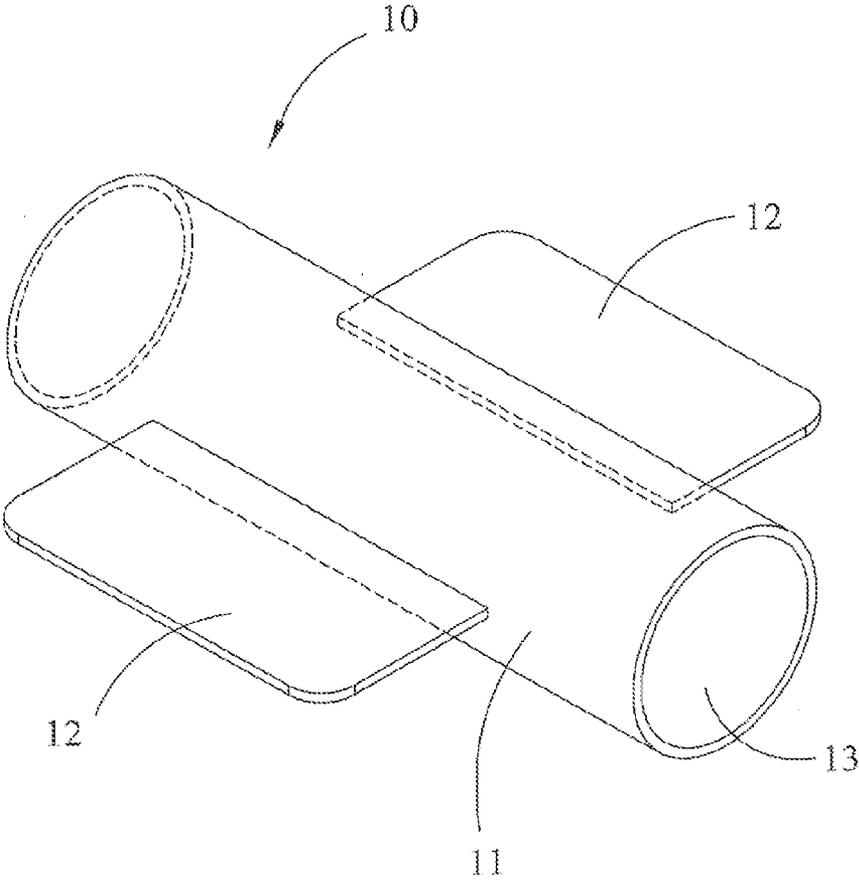


Fig. 2

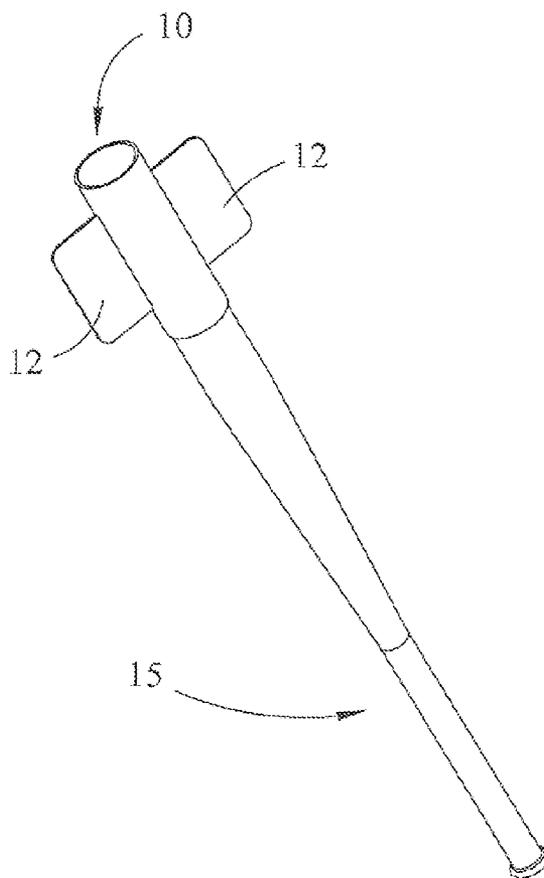


Fig. 3

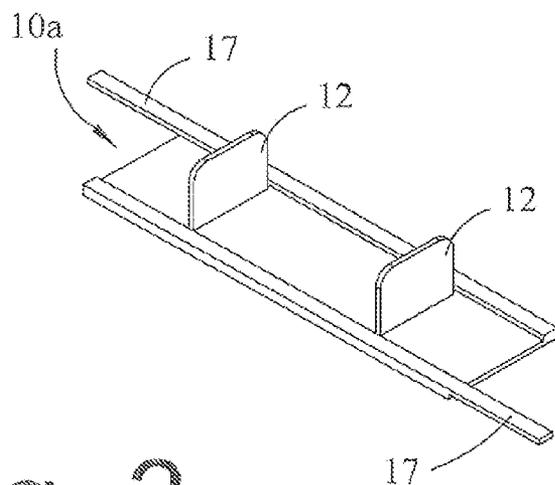


Fig. 5

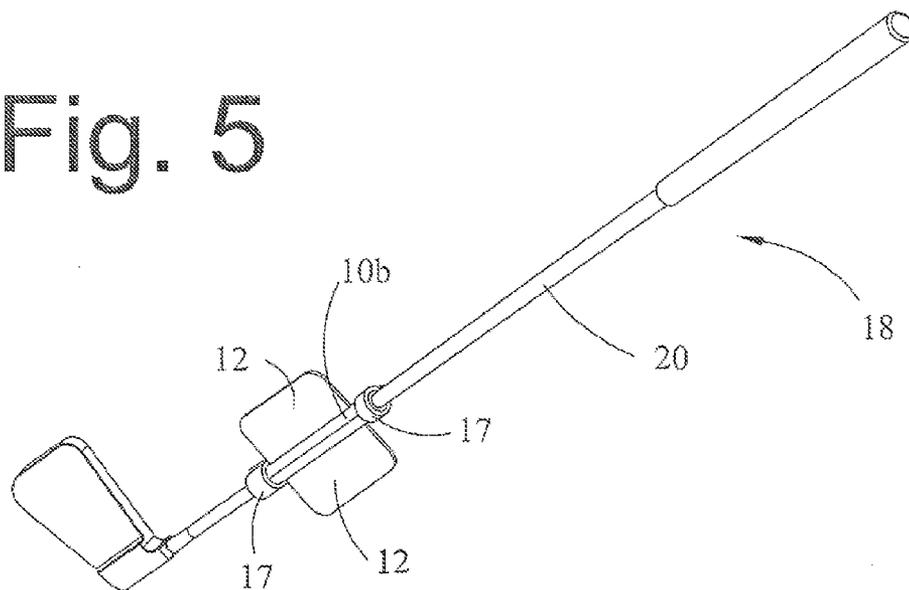
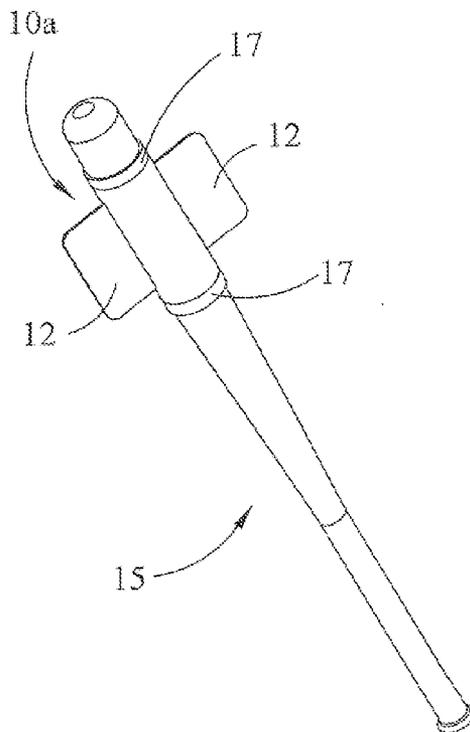


Fig. 4



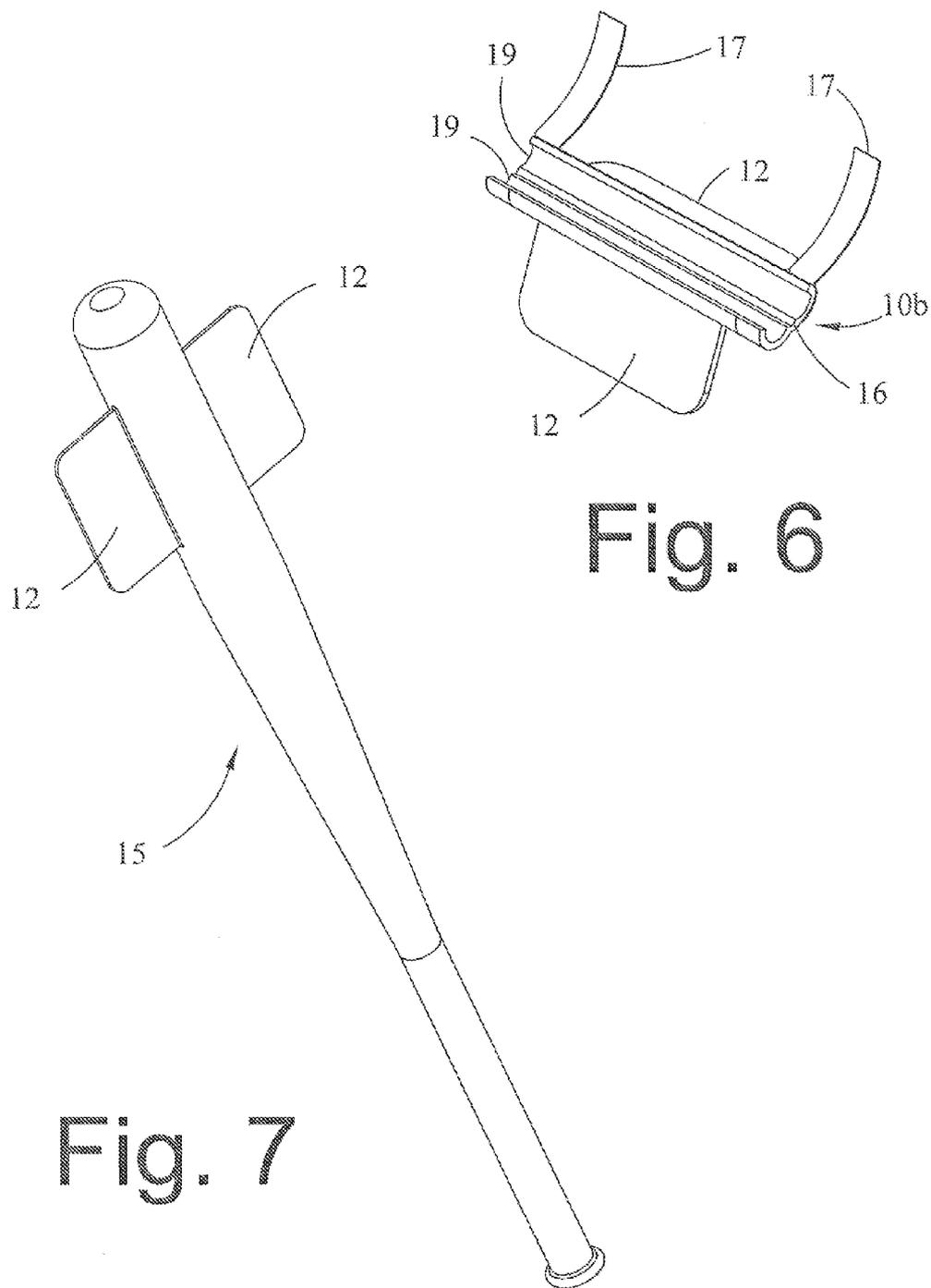


Fig. 6

Fig. 7

Fig. 8

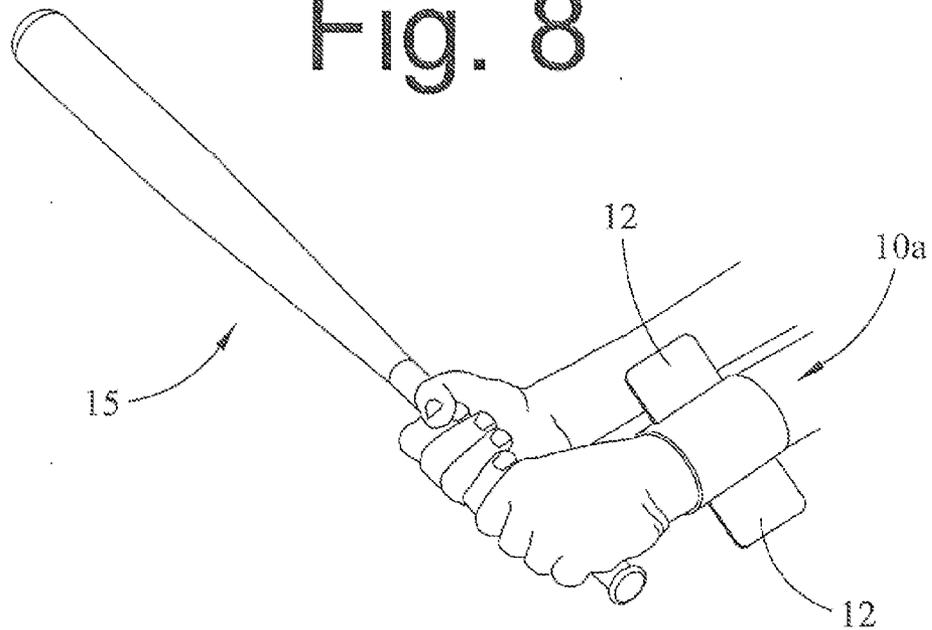
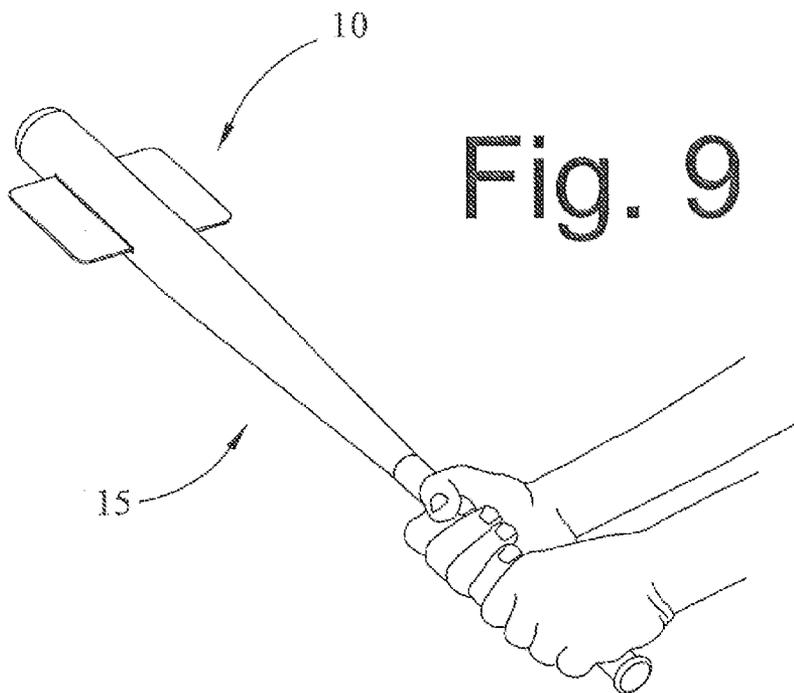


Fig. 9



TRAINING DEVICE

FIELD OF THE INVENTION

[0001] The present invention relates to a training device for providing feedback as to hand position and trajectory of an implement swung in a stick sport as well as methods of improving muscle memory for participants in stick sports. The training device consists of a sports implement in the form of a bat, stick, club, mallet, wicket, etc. wherein one or more indicators are affixed at a predefined radius to the longitudinal plane of the training device. Alternatively, the invention consists of a training device attachable to a sports implement, such as a bat, stick, club, mallet, wicket, etc., comprising one or more indicators which will assume an adjustable position radial to the longitudinal plane of the stick implement. Further, the invention consists of a training device also comprising one or more indicators which is wearable on the arm or leg of a participant, either via an elastic band or a Velcro® strap. Methods of improving muscle memory and/or sports technique using the training devices described herein are contemplated, as well.

BACKGROUND OF THE INVENTION

[0002] It is well known that various sports implements are utilized in stick sports such as bats, sticks, clubs, mallets, wickets, etc. Participants in such sports endeavor to perfect their form or swing to optimize the particular impact with a ball, puck, etc. Considering the fact that most sports involve some degree of velocity at the time of impact between the stick and the ball, visualization and spatial feel at the point of impact are difficult to assess for the participant. Directly related to the trajectory of the implement when impacting the ball, puck, etc. is the positioning of the participant's/player's physical hold on the implement throughout the course of the swing of the implement. What is envisioned, therefore is a means and method for training a participant/player to maximize technique through the development of proper physical positioning and muscle memory.

[0003] The prior art is replete with softball/baseball bats of all kinds and descriptions and also includes, but is not limited to other stick sports such as golf, fishing, cricket, billiards.

[0004] Representative implements disclosed in the art include:

[0005] Equipment for ball hitting practice, U.S. Pat. No. 5,332,225, describes apparatus for digital display of defective ball hitting form.

[0006] Swing analyzing device, U.S. Pat. No. 5,233,544, describes acceleration sensors arranged on the shaft of a hitting device.

[0007] Stick blade, U.S. Pat. No. 5,827,141, describes an improved blade for a hockey stick or the like.

[0008] Bat training device, U.S. Pat. No. 7,762,913, describes a resistance and wrist speed training device.

[0009] Batting apparatus, U.S. Pat. No. 5,014,984, describes a practice baseball batting training apparatus with hand grip having raised portions.

[0010] Bat swing guide, U.S. Pat. No. 5,595,384, describes an arcuate guide connected to a pivoting tee.

[0011] Batting swing trainer and method, U.S. Pat. No. 6,949,036, describes a bat trainer having a shaft with moveable slide causing audible sound.

[0012] Resistance device for a baseball bat, U.S. Pat. No. 5,888,154, describes a resistance device including a cylindrical

cal sleeve and a chute for use with a baseball bat for providing wind resistance during a swing.

[0013] Golf stroke training attachment, U.S. Pat. No. 5,230,513, describes a device worn on leading hand to show alignment of swing.

[0014] Golf stroke training attachment, U.S. Pat. No. 5,152,532, describes a device worn on back hand to show alignment of swing.

[0015] Batting practice attachment for baseball bats, U.S. Pat. No. 5,695,419, describes a thin walled tube of rubber-like material attachment for baseball bats for protecting the bat surface.

[0016] Batting practice attachment for baseball bats, U.S. Pat. No. 5,605,325, describes a thin walled tube of rubber-like material for attachment for baseball bats with the tube being closed at one end for protecting the bat surface.

[0017] Batting practice attachment for baseball bats, U.S. Pat. No. 6,093,114, describes a thin walled tube of rubber-like material for attachment to baseball bats with the tube being closed at one end for protecting the bat surface.

[0018] Sport implement swing training method, U.S. Pat. No. 4,657,251, describes an elastic wristband with Velcro to stimulate the skin with the sharp points of the Velcro to aid in proper orientation of a person's hand while holding a sports implement.

[0019] Batting practice device, U.S. Pat. No. 3,940,131, describes a practice device with elongated vertically spaced horizontally extending arms which are attached to posts positioned vertically to the ground, which horizontally extending arms hold a practice ball, thereby aiding in developing a level swing.

[0020] Physical training method and device, U.S. application Ser. No. 12/928,707, describes a resistance device connected between the hand or glove or the participant and some anchor in the middle of the back to facilitate resistance training.

[0021] Method and wrist device, U.S. application Ser. No. 11/804,596, describes an electronic wrist device used for measuring stepping acceleration and frequency.

[0022] Wrist-worn device, U.S. application Ser. No. 09/969,825, describes an electronic wrist device for measuring and displaying exercise information.

[0023] Sports wrist band, U.S. application Ser. No. 11/993,092, describes a wrapped wrist band which functions to increase gripping strength as well as provide protection.

[0024] Basketball shooting aid, U.S. Pat. No. 7,041,015, describes lines and designs on a basketball to help with hand positioning.

[0025] Basketball shooting aid, U.S. application Ser. No. 13/277,848, describes a basketball shooting aid comprising a brace for the participant's forearm and hand to hold the participant's arms in a proper position for shooting a basketball.

[0026] The present invention provides for a simple training device which allows for visual and/or auditory assessment of swing trajectory associated with the participant's/player's physical hold of a sports implement. Advantages include simplicity of construction, operation, freedom from interference with proper technique, and safety. Such a training device is not necessarily permanently attached to an implement, but may be variably attached to the surface of conventional sports implements so that the training device may be used in association with the actual implement used in a sports activity. Alternatively, the training device may be attached to the arm or leg of the participant.

SUMMARY OF THE INVENTION

[0027] What I therefore believe to comprise my invention may be summarized inter alia in the following words:

[0028] A training device adapted for use in association with a sports implement, comprising one or more visual cue(s) which may be viewed by an athlete in physical contact with such implement, wherein such one or more visual cue(s) provide an indication of the position of the sports implement throughout various positions of use of such sports implement by such athlete;

[0029] Such a The training device, which is adapted for attachment to sports implements selected from bats, clubs, poles, cues, wickets and sticks;

[0030] Such a training device, which is comprised in a sports implement selected from a bat, club, pole, cue, wicket and stick;

[0031] Such a training device, optionally providing auditory indication of the position of the sports implement throughout various positions of use of such sports implement by such athlete;

[0032] Such a training device, wherein the device is adapted to be worn on an appendage of the athlete;

[0033] Such a training device, wherein the device is adapted for sliding over a distal end of such a sports implement and maintaining a fixed position;

[0034] Such a training device, wherein the device comprises straps for attachment around the sports implement;

[0035] Such a training device, wherein the straps are constructed of hook and loop material for securely wrapping around and securing the training device to the sports implement;

[0036] Such a training device, constructed of a flexible material for wrapping around a sports implement;

[0037] Such a training device, wherein the flexible material is constructed of hook and loop material for securely wrapping around and securing the training device to the sports implement;

[0038] Such a training device, adapted for use with a bat;

[0039] Such a training device, adapted for use with a club;

[0040] Such a training device, adapted for use with a pole;

[0041] Such a training device, adapted for use with a cue;

[0042] Such a training device, adapted for use with a wicket;

[0043] Such a training device, adapted for use with a stick;

[0044] As well as a method of training an athlete, comprising the use of such a training device to provide an athlete with an indication of the position of the sports implement throughout various positions of use of such sports implement;

[0045] Such a method, wherein the training device is used in association with a sports implement;

[0046] Such a method, wherein the training device is worn by the athlete;

[0047] Such a method, for use in developing muscle memory in an athlete using the training device; and

[0048] Such a method, wherein the athlete is a special needs athlete.

BRIEF DESCRIPTION OF THE DRAWINGS

[0049] FIG. 1 is a schematic of a representative training device of the invention;

[0050] FIG. 2 is a schematic side elevation view of the present invention as it relates to use with a bat;

[0051] FIG. 3 is a schematic side elevation view of the present invention as it in the form of a wrap;

[0052] FIG. 4 is a schematic side elevation view of the present invention in the form of a wrap adapted for use in association with a bat;

[0053] FIG. 5 is a schematic side elevation view of the present invention in the form of a split tubular sleeve adapted for use in association with a club;

[0054] FIG. 6 is a schematic side elevation view of the present invention in the form of a split tubular sleeve;

[0055] FIG. 7 is a schematic side elevation view of the present invention as it relates to a bat being built with the training device incorporated therein;

[0056] FIG. 8 is a schematic side elevation view of the present invention as it relates to use with a wrist strap.

[0057] FIG. 9 is a schematic showing the positioning of the hands when using the training device in association with an implement such as a bat.

DETAILED DESCRIPTION OF THE INVENTION

[0058] For the purpose of the present invention, an implement shall refer to any bat, stick, club, pole, or racket sports equipment typically used in the play of such sports. Non-limiting examples of such implements include baseball/softball bats, golf clubs, fishing poles, billiard/pool cues, tennis/badminton/squash/paddleball rackets, hockey sticks, and the like.

[0059] As used herein, the implement shall have a handle or shaft to which the training device may alternatively be integrally molded with or removeably attached or strapped. Optionally, the training device may be worn or attached to the arm or leg of the participant.

[0060] The training device may be constructed of materials conventional and suitable in the art, depending on the implement to which it is molded or attached, and/or whether it is to be worn by the participant.

[0061] The term grip shall refer to the physical hold a participant/player makes with the particular implement, whether the point of attachment refers to a handle, grip or other point of physical holding by the participant.

[0062] In addition, using methods known to those skilled in the art, a participant/player may be trained utilizing the inventive training devices in association with appropriate implements as described herein are encompassed by the invention.

[0063] The phrase "muscle memory", as used in connection with the training devices and training methods described herein refers to the development of neuromuscular pathways in the participant/player associated with implement swing or stroke or kick patterns.

[0064] It is, therefore, my invention to provide training devices for the development of better technique in a variety of sports and activities optionally involving a stick implement. What is known in the art is that, in a variety of activities, participant/player technique depends on moving the stick implement in a way which provides for the requisite transmission of force, whether through the hitting of a ball, puck, etc. or transmitting a strand or string. As the physical point of attachment of the implement involves the participant/player holding the implement, there are necessarily a number of variable positions which the hands/wrists/arms/etc. may assume. In an effort to provide feedback to the participant/player and/or trainer/coach, I have invented a training device which may be molded into or attached to the implement, which training device may provide visual and/or auditory

indication of the participant's/player's hold and trajectory of the implement throughout the associated swing of the implement.

[0065] Optionally, the training device may be worn by the participant, similarly giving visual and/or auditory indication of the participant's hold of an implement or physical contact with a projectile such as a ball.

[0066] Optionally, the training device may be designed with simple harmonic characteristics such that, during the participant's swing or physical movement, the training device produces a particular auditory "whistle" corresponding to a particular inclination of the training device and/or velocity. Technologies for providing such auditory "whistle" are known in the art. Non-limiting examples include simple Helmholtz resonators, variable frequency sirens, whistles, and the like.

[0067] Non-limiting embodiments of the training device are depicted in FIGS. 1-9, which embodiments exhibit the function and usage of the training device as utilized with or constructed into representative sports implements. As will become apparent in the detailed description of the training device below, in its most basic sense, the training device functions to provide fixed panels on either a sports implement or a participant's arm or wrist or even leg, which fixed panels provide simple visual, and optionally audible, indication of speed and angle of motion to the participant, thereby facilitating better understanding of technique and/or development of better technique.

[0068] In its most basic sense, the instant invention provides for a training device as depicted generally in FIG. 1. The training device is identified generally at 10 in the drawings. The training device comprises a cylindrical portion 11, defining a longitudinal shaft and an exterior surface, which training device may optionally be attachable to a sports implement by virtue of being rendered in tubular form and wrapped or slid over the longitudinal shaft of a sports implement or optionally molded as part of a shaft portion of a sports implement. Such cylindrical portion 11 further comprises one or more visual and/or auditory indication panels depicted as 12, extending outward longitudinally from the external surface of the cylindrical portion 11. Optionally, the training device has an interior surface forming a tubular cavity 13.

[0069] An embodiment of the present invention is the provision of a training device for attachment to a baseball bat as illustrated in FIG. 2. The training device 10 as depicted in this figure rendered in the form of a tubular sleeve having an internal tubular cavity 13 into which a distal end of a baseball bat 15 may be inserted, such tubular cavity 13 having an internal surface and an external surface, which training device 10 is made of expandable flexible material adapted for secure attachment to the baseball bat 15 by sliding from the distal end of the baseball bat 15 having a transverse radius, such that the training device 10, when attached, is securely fitted to the baseball bat 15 via the internal surface of the training device 10, such that the training device 10 may not rotate with respect to the baseball bat 15. Such training device 10 is optionally closed at one end, thereby defining the extent to which the baseball bat 15 may be inserted. Such training device 10 further comprises one or more visual and/or auditory indication panel(s) 12 extending outward from the external surface of the training device 10 such that the one or more indication panel(s) 12 are fixed in a predetermined angle to the external surface of the training device 10 relative to the transverse radius of the baseball bat 15.

[0070] Another embodiment of the present invention is the provision of a training device for attachment to a baseball bat as illustrated in FIG. 3. The training device as depicted in this figure comprises a rectangular wrap 10a having an internal surface and an external surface such that the rectangular wrap may be wrapped around the distal end of a baseball bat 15 wherein the internal surface of the rectangular wrap 10a contacts the surface of the baseball bat 15 and the external surface of the rectangular surface of the rectangular wrap 10a is exposed when wrapped around the baseball bat 15, which rectangular wrap 10a is made of expandable flexible material adapted for secure fitting to the baseball bat 15 by wrapping the rectangular wrap 10a around the distal end of the baseball bat 15, such that the rectangular wrap 10a, when wrapped around the baseball bat 15, is securely fitted to the baseball bat 15, such rectangular wrap 10a being securely fitted to the baseball bat 15 via either adhesion to itself through some hook and loop means affixed to the internal and external surfaces of the rectangular wrap 10a and/or via strapping 17 operateable when the rectangular wrap 10a is wrapped around the baseball bat 15, such that the rectangular wrap 10a may not rotate with respect to the baseball bat 15. Such rectangular wrap 10a further comprises one or more visual and/or audible indication panel(s) 12 extending outward from the external surface of the rectangular wrap 10a such that the one or more indication panel(s) 12 are fixed in a predetermined angle to the external surface of the rectangular wrap 10a relative to the transverse radius of the baseball bat 15 as depicted in FIG. 4.

[0071] Another embodiment of the present invention is the provision of a training device for attachment to a golf club 18 as illustrated in FIG. 5. The training device as depicted in this figure and FIG. 6 comprises a split tubular sleeve 10b having two equal and connecting half tubular sleeve portions 19, connected longitudinally along one side by a hinge 16, and forming when closed a tube having an internal tubular cavity securely closed around a golf club shaft 20, which split tubular sleeve 10b is adapted for secure attachment to the golf club shaft 20 by the closing and securing of the two half tubular sleeve portions 19, such that the split tubular sleeve 10b, when secured, is fixedly fitted to the golf club shaft 20, such that the split tubular sleeve 10b may not rotate with respect to the golf club shaft 20. Such split tubular sleeve 10b further comprises one or more visual and/or audible indication panel(s) 12 extending outward from the external surface of the split tubular sleeve 10b such that the one or more indication panel(s) 12 are fixed in a predetermined angle to the external surface of the split tubular sleeve 10b relative to the transverse radius of the golf club shaft 20. The split tubular sleeve 10b, optionally comprising strapping 17, employing, for example, hook and loop means for securing the split tubular sleeve 10b to the golf club shaft 20.

[0072] Another embodiment of the present invention is the provision of a training bat constructed to embody the training device 10, comprising one or more winged panel(s) 12 as illustrated in FIG. 7. The training bat depicted in this figure comprises one or more visual and/or audible indication panel(s) 12 extending outward from the external surface of the training bat such that the one or more indication panel(s) 12 are fixed in a predetermined angle to longitudinal surface of the training bat relative to the transverse radius of the training bat.

[0073] Another embodiment of the present invention is the provision of a training device for attachment to an arm or

wrist of an athlete as illustrated in FIG. 8. The training device as depicted in this figure comprises a rectangular wrap 10a, as illustrated in FIG. 3, such that the rectangular wrap 10a may be wrapped around a wrist or arm of an athlete, forming an internal surface which contacts the skin of the wrist or arm of the athlete, which rectangular wrap 10a is made of expandable flexible material adapted for secure fitting to the wrist or arm of the athlete by wrapping the rectangular wrap 10a around the wrist or arm of the athlete, such that the rectangular wrap 10a, when wrapped around the wrist or arm of the athlete, is securely fitted to the wrist or arm of the athlete, such rectangular wrap 10a being securely fitted to the wrist or arm of the athlete via either adhesion to itself through some hook and loop means affixed to the internal and external surfaces of the rectangular wrap 10a and/or via strapping 17 operable when the rectangular wrap 10a is wrapped around the wrist or arm of the participant, such that the rectangular wrap 10a may not rotate with respect to the wrist or arm of the athlete. Such rectangular wrap 10a further comprises one or more visual and/or audible indication panel(s) 12 extending outward from the external surface of the rectangular wrap 10a such that the one or more indication panel(s) 12 are fixed in a predetermined angle to the external surface of the rectangular wrap 10a relative to the position of the wrist or arm of the athlete.

[0074] An embodiment depicting the use of a representative training device in a training session is depicted in FIG. 9. As is illustrated, the training device is positioned such that the normal function of batting, as depicted in this embodiment, may still be accomplished while the participant may receive visual, and optionally auditory, information regarding hand positioning vis-à-vis the implement throughout the full rotation of a swing cycle. This information may be utilized by coach/trainer and/or participant in developing proper self-alignment of the wrist and the implement. With repetitive practice utilizing the training device in training, the participant may develop muscle memory for proper swing of the implement. Other training practices may be appreciated by those skilled in the art, particularly with respect to different sports utilizing different implements.

[0075] With respect to the above-described training devices, it is to be understood that the dimensional relationships and construction for the elements of the training device of the invention, including variations in size, materials, shape, form, function and the manner of operation, assembly and use, are deemed to be within the skill of the person having ordinary skill in the art, and all equivalent relationships and construction to those illustrated and described in the foregoing are intended to be encompassed by the present invention.

[0076] While the particular preferred embodiment of the present invention has been described, it would be obvious to those skilled in the art that modifications may be made without departing from the teaching of the present invention.

I claim:

1. A training device adapted for use in association with a sports implement, comprising one or more visual cue(s) which may be viewed by an athlete in physical contact with

such implement, wherein such one or more visual cue(s) provide an indication of the position of the sports implement throughout various positions of use of such sports implement by such athlete.

2. The training device of claim 1, which is adapted for attachment to sports implements selected from bats, clubs, poles, cues, wickets and sticks.

3. The training device of claim 1, which is comprised in a sports implement selected from a bat, club, pole, cue, wicket and stick.

4. The training device of claim 1, optionally providing auditory indication of the position of the sports implement throughout various positions of use of such sports implement by such athlete.

5. The training device of claim 1, wherein the device is adapted to be worn on an appendage of the athlete.

6. The training device of claim 1, wherein the device is adapted for sliding over a distal end of such a sports implement and maintaining a fixed position.

7. The training device of claim 1, wherein the device comprises straps for attachment around the sports implement.

8. The training device of claim 7, wherein the straps are constructed of hook and loop material for securely wrapping around and securing the training device to the sports implement.

9. The training device of claim 1, constructed of a flexible material for wrapping around a sports implement.

10. The training device of claim 9, wherein the flexible material is constructed of hook and loop material for securely wrapping around and securing the training device to the sports implement.

11. The training device of claim 1, adapted for use with a bat.

12. The training device of claim 1, adapted for use with a club.

13. The training device of claim 1, adapted for use with a pole.

14. The training device of claim 1, adapted for use with a cue.

15. The training device of claim 1, adapted for use with a wicket.

16. The training device of claim 1, adapted for use with a stick.

17. A method of training an athlete, comprising the use of a training device of claim 1 to provide an athlete with an indication of the position of the sports implement throughout various positions of use of such sports implement.

18. The method of claim 17, wherein the training device is used in association with a sports implement.

19. The method of claim 17, wherein the training device is worn by the athlete.

20. The method of claim 17, for use in developing muscle memory in an athlete using the training device.

21. The method of claim 17, wherein the athlete is a special needs athlete.

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