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(54) **SPORTS SWING TRAINER APPARATUS AND METHOD**

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ABSTRACT

Method and apparatus for emulating the striking member and ball of selected sports, the striking member having an end portion including portions covered with a selectively engageable contact material such as Velcro™ brand fastener and further having a mass and size substantially in conformity with the mass and size of the striking member commonly employed in the selected sport, and a target member for emulating the playing object of the selected sport or game, the target member having a target portion similarly covered with a selectively engageable contact material such as Velcro™ brand fastener, where the mass and response of the target member is readily altered to emulate the mass and response of a ball under a variety of conditions by selectively attaching one or more momentum elements of varying size to the target member.

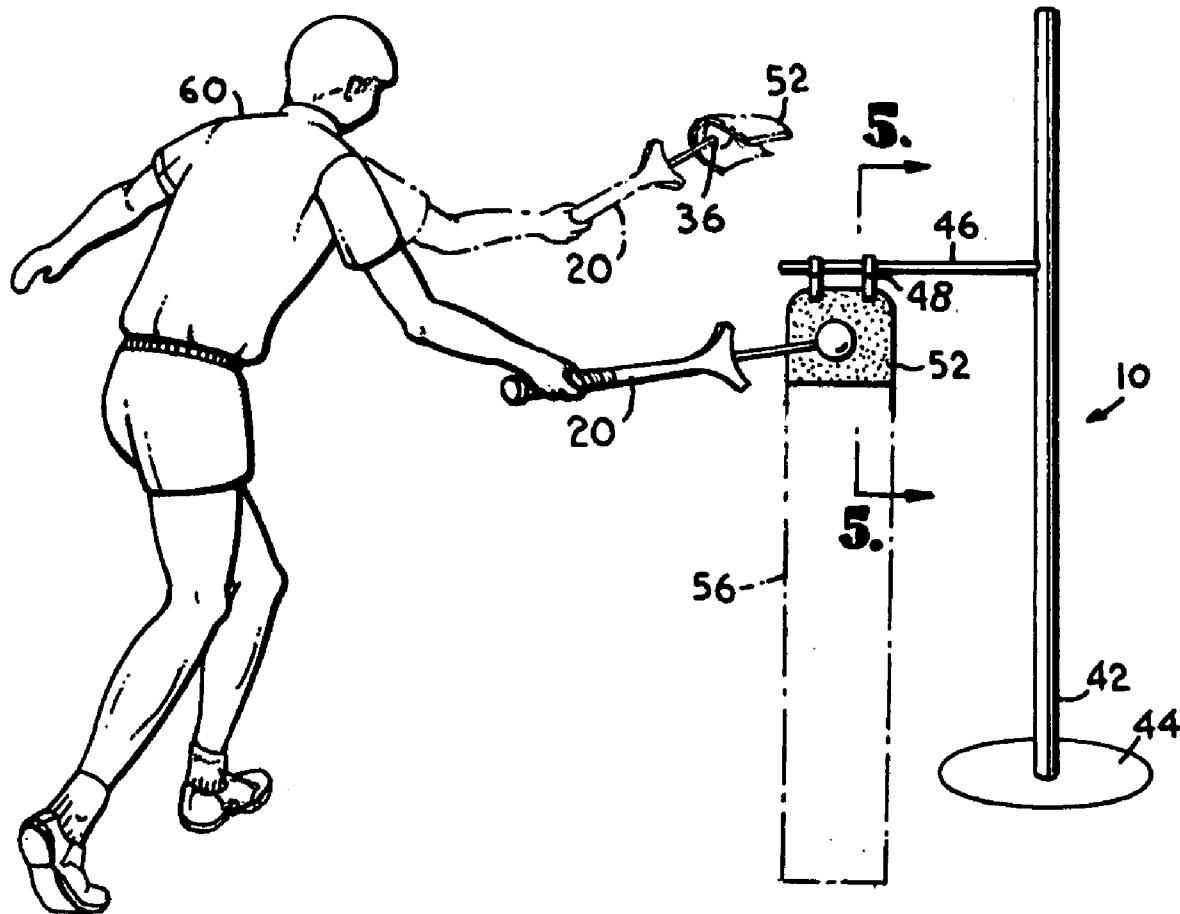


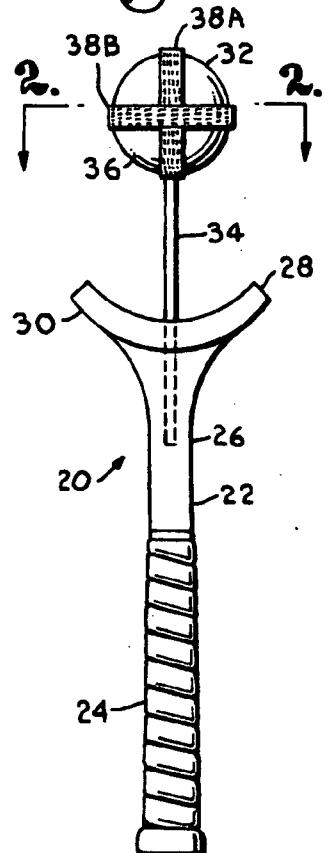
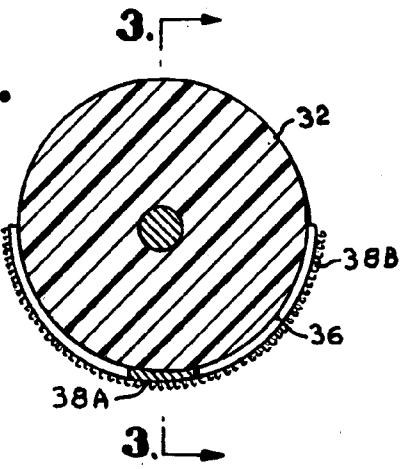
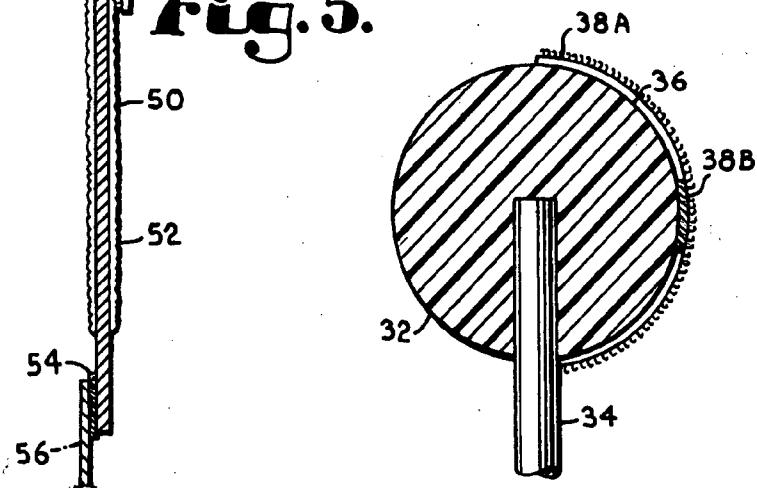
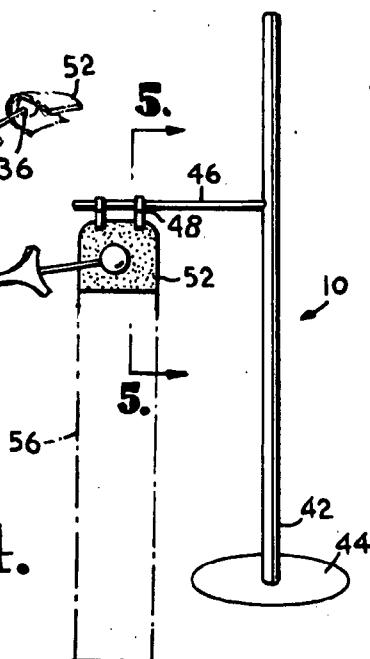
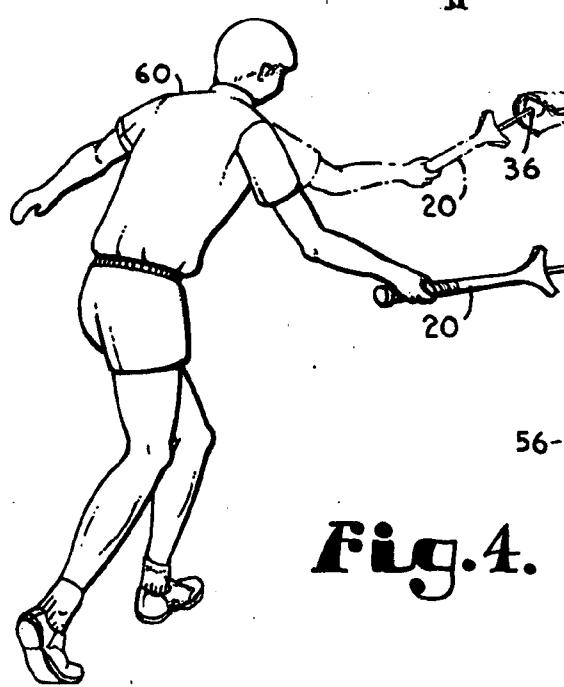
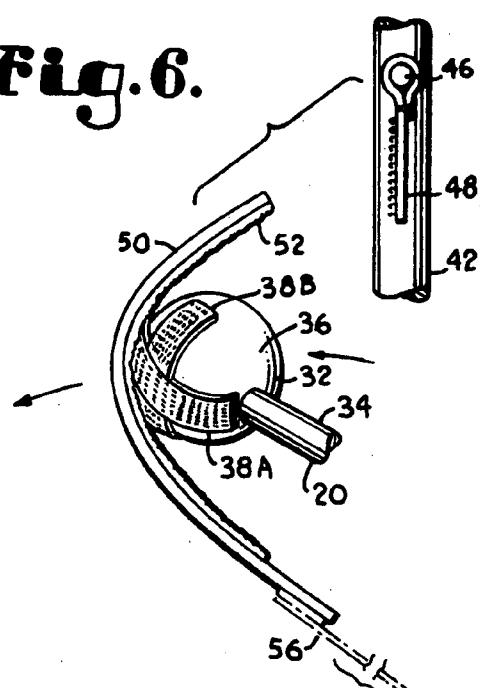
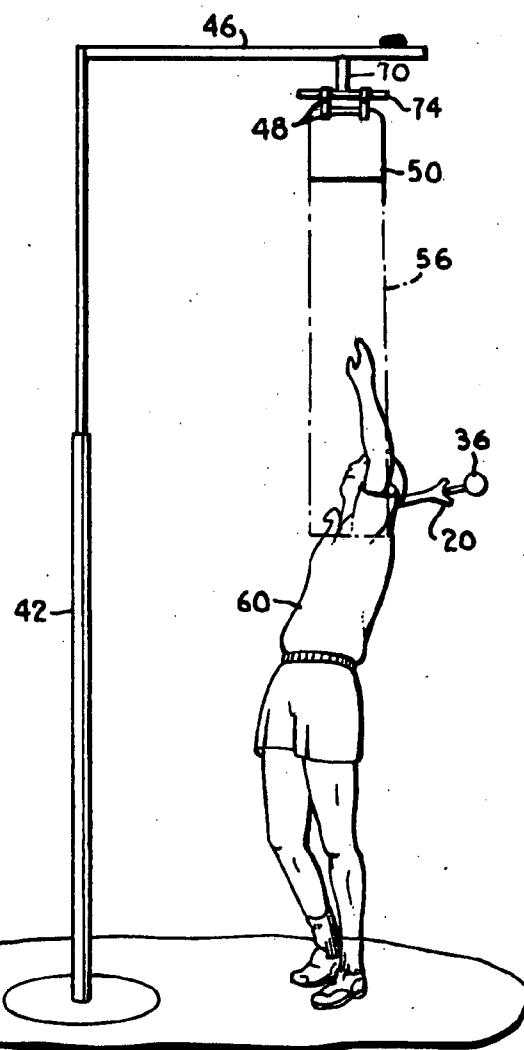
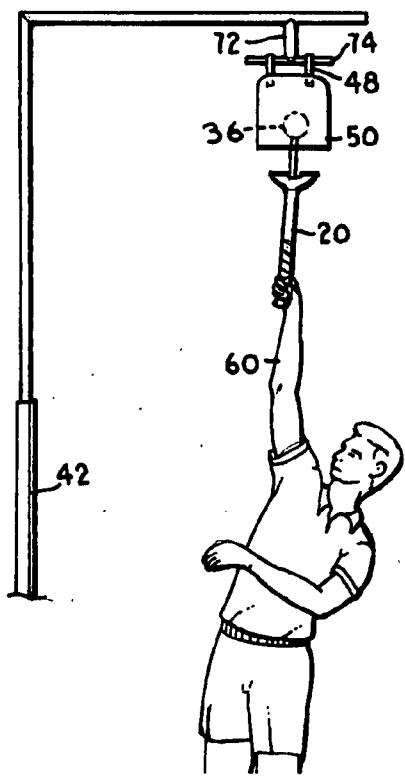
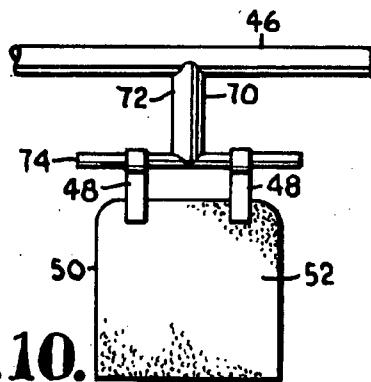
Fig.1.**Fig. 2.****Fig. 5.****Fig. 3.****Fig. 4.**

Fig. 6.**Fig. 7.****Fig. 8.****Fig. 10.**

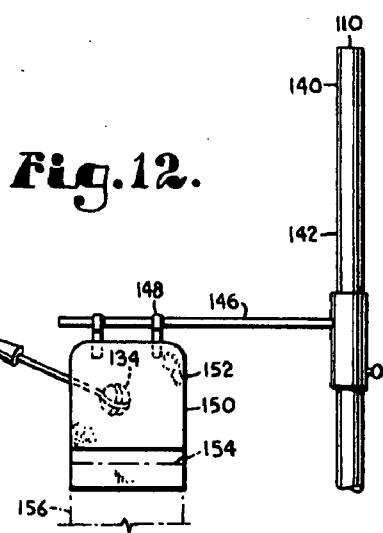
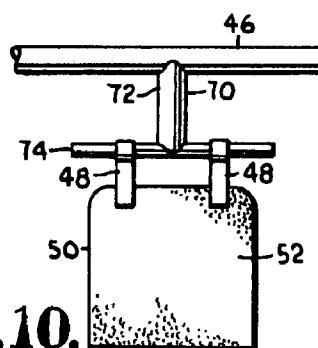
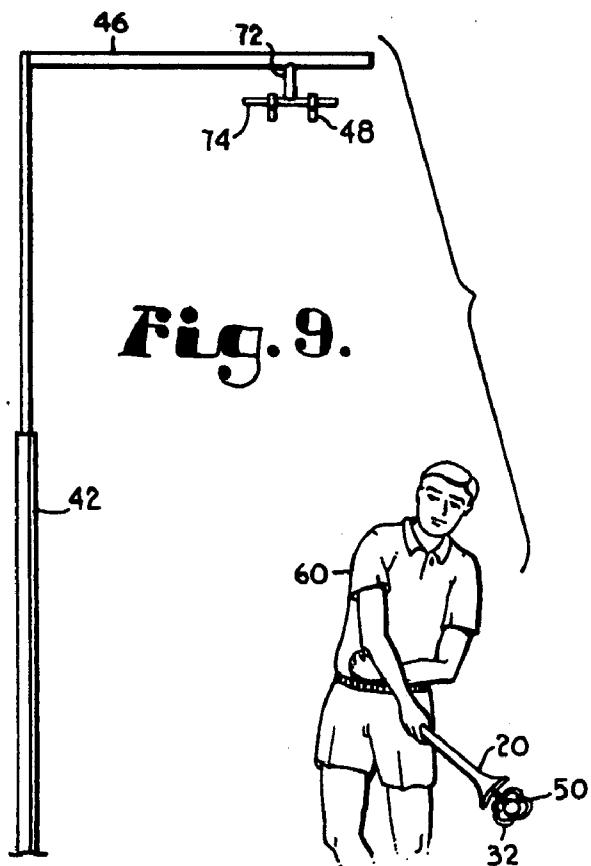
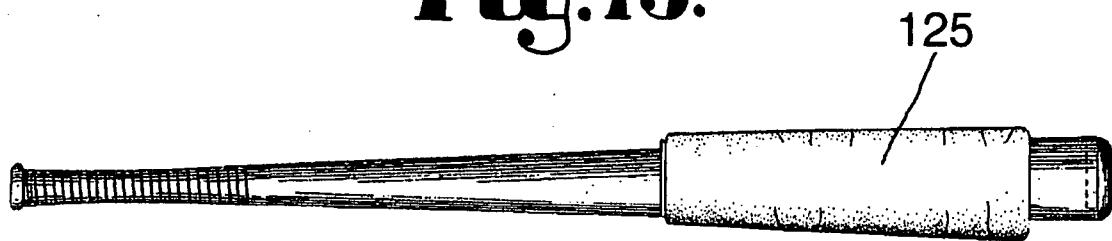
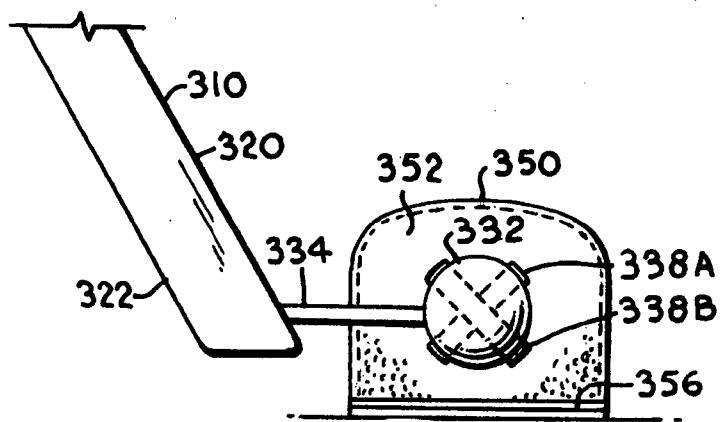


Fig.13.**Fig.14.**

SPORTS SWING TRAINER APPARATUS AND METHOD

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] This invention generally pertains to gaming and sporting apparatus, and more particularly to apparatus, equipment and methods for games, sports and similar activities involving the training and improving of a player's swing for swinging a striking member and striking an unconstrained playing object, such as a ball or a puck.

[0003] 2. Background Art

[0004] There are a number of well-known sports which include an unconstrained playing object driven by the action of a player upon the object. Typically the playing object is a ball and the player acts upon the ball by striking the ball with a striking member such as a bat. In each case, the playing object must be located in a prescribed strike zone, from which it is driven in furtherance of obtaining the goal. Examples of such sports include baseball (hardball or softball), tennis, hockey, and golf. As is generally well known, the playing object and the striking member is different in each sport, and each has different operating, behavioral and response characteristics. Furthermore, each game has its own specific sets of generally well known and easily obtained rules and regulations which control the play of the game and the actions of the player or players.

[0005] Generally, the baseball is a hard leather ball sized to fit comfortably in the palm of the average hand and of a suitable weight to be easily thrown. In play, the ball is thrown by one player and passes through a baseball strike zone immediately in front of another player, who swings a striking member in the form of a generally cylindrical bat in an endeavor to strike the airborne ball so as to gain an opportunity to traverse the series of bases and obtain a score. If the player strikes the ball with the bat, it is a "hit", and if the player misses the ball, a "strike" is counted against the player.

[0006] In tennis, a net is provided to divide the field of play or tennis court. Each player is provided a striking member in the form of a racquet which includes a head portion and a handle portion for striking a resilient tennis ball to drive the ball across the net and into the opposing player's portion of the field. Each player must return the ball from their respective portion of the tennis court, and the ball must be struck within the court boundaries and while airborne.

[0007] Hockey includes a striking member in the form of a hockey stick with a striking head and a handle extending upwardly at an angle to be gripped by the player. In lieu of a ball, the playing object is formed as an annular cylindrical section commonly known as a puck. Each player attempts to strike and drive the puck toward the goal of the opposing team. Each of two opposing teams is provided with a goal at opposing ends of the field of play, an ice covered arena.

[0008] In each case, the conformation of the playing object and the methods and rules of the game vary, but the playing object must be driven at the correct speed and in the correct direction to attain the goal and win the game. This can only be accomplished by the player's correctly striking the playing object in the strike zone, whether with bat, racquet or foot. Therefore, it is extremely important that the player seek to improve the skill of correctly and accurately striking the ball. In each respective sport, there is an ideal

swing pattern which is preferred as bringing about the most accurate reaction in the playing object, and the player will seek to consistently replicate this pattern. However, this result cannot be casually obtained. The act of striking the swing must be regularly practiced, and the player who attains the status of professional athlete will seek to hone this skill as an integral and important part of a successful career. The player seeking to improve his or her swing will often review printed instructional materials, whether text or photographic, which reduce the ideal swing to a series of component portions or moves. After reviewing these materials, the player will then attempt to replicate these moves. However, it is difficult for the player to ascertain whether in fact his swing has successfully duplicated the requisite moves. Of course, it is generally critical to actually duplicate the moves and not merely to make the attempt. Therefore, some form of feedback from the practice swings is necessary so as to bring the next successive practice swing into greater conformity with the desired swing.

[0009] Training feedback, in the prior art, has been accomplished in a number of ways. The player, in some cases may be able to perform the practice swings before a mirror and observe the actual swing. While this method offers instantaneous feedback, it has several substantial disadvantages. Firstly, the player cannot concentrate on the practice swing and concentrate on observing the mirrored swing simultaneously without a real reduction in performance. Secondly, the practice swing often takes place at a high rate of speed, exceeding the ability of the human eye to correctly discern the sequence and correctness of the moves of the swing. Thirdly, the mere presence of the mirror may actually constitute a physical hazard to the player if the mirror is not sufficiently protected from the playing object when propelled by the impact of the striking member. Finally, it is typical to attempt many practice swings during a practice session, which may necessitate the use of a relatively large number of playing objects and a fair amount of time to recover the projected playing objects.

[0010] Another method of training requires the player to employ the services of an instructor or personal trainer. This method is better than the former method, since the trainer can observe the swing objectively and the player can concentrate on the practice swing entirely. However, this method still involves the use of a relatively large number of playing objects and the recovery time necessary. Also, the trainer's ability to observe the swing remains limited to the ability of the human eye to interpret the moves. There is also commonly a substantial cost factor involved in the retaining of a personal trainer, and the additional concern regarding the knowledge and qualifications of the trainer to diagnose and teach the correct swing.

[0011] The player may also elect to photograph a video record of the practice swings. This allows the player, or an instructor, to review the practice swings with a view to correctness, although this review may be difficult to conduct contemporaneously. Also, the video record may be reviewed at a reduced speed and thereby more accurately analyzed. However, as with the personal trainer, the recording and analyzing process usually involves substantial set-up and operating expense, and may also require a special location providing controlled conditions.

[0012] Another method of training involves the use of specially designed mechanical apparatus which provides feedback to the player about the swing. Such apparatus is

often expensive and distracting to the player during the practice session, occasionally even hindering the training process.

[0013] Furthermore, in all of the foregoing, it is typically necessary to conduct practice sessions at either an actual playing field or a field or facility especially designed for the practice of the selected sport, which often presents difficulties because of scheduling constraints for the player and others, because of travel, or because of weather.

[0014] None of the foregoing provide any substantial immediate tactile feedback useful and desirable for immediate correcting of the swing. It is also difficult to determine whether the player has correctly placed the striking member in relation to the playing object and thereby determine the accuracy of the player's swing. Finally, the momentum and response of the ball may vary under different playing conditions, and it is desirable to emulate these conditions and to train the player's physical responses to accommodate these differences with a minimum of discomfiture and thereby to maximize the player's accuracy and power in the strike.

[0015] Most current training methods like U.S. Pat. No. 5,980,397 and U.S. Pat. No. 5,286,021, and U.S. Pat. No. 5,964,671 utilize some sort of weighting arrangement to provide resistance. Unfortunately they do not increase the resistance at the most critical point of the swing-impact. Nor, do they provide verification of squareness at impact.

[0016] One training method and apparatus which overcomes several of these difficulties in training the swing for the various sports is disclosed in U.S. Pat. No. 5,026,064, issued to the present inventor, which discloses a golf training club and a specially adapted target resting on a playing surface.

[0017] It is therefore an object of the present invention to conveniently provide a method of practicing the swing desired for a selected sport or game.

[0018] It is another object of the present invention to provide an apparatus suitable for providing feedback of the results of the practice swing.

[0019] It is yet another object of the present invention to provide such a method and apparatus as will permit the player to safely and conveniently practice the desired swing.

[0020] It is still another object of the present invention to provide such a method and apparatus as will permit the player to obtain immediate desirable tactile feedback useful in improving each successive practice swing.

[0021] It is another object of the present invention to provide such a method and apparatus as will enable the player to improve his swing for a selected sport or game.

[0022] It is a still further object of the present invention to provide such a method and apparatus as may be employed either by the player or by the player and an instructor for the improvement of the player's swing.

[0023] It is a further object of the present invention to provide such a method and apparatus as may be inexpensively and simply employed by the player.

[0024] It is yet a further object of the present invention to provide such a method and apparatus as may be employed without requirement of a special location or playing or practice field.

[0025] It is therefore an object of the present invention to conveniently provide a method of practicing the swing desired for a selected sport or game.

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[0028] It is still another object of the present invention to provide such a method and apparatus as will permit the player to obtain immediate desirable tactile feedback useful in improving each successive practice swing.

[0029] It is another object of the present invention to provide such a method and apparatus as will enable the player to improve his swing for a selected sport or game. It is another object of the present invention to provide such a method and apparatus as will successfully emulate in the practice swing the physical requirements of the actual swing.

[0030] It is yet another object of the present invention to provide such a method and apparatus as will provide accurate tactile feedback to the player and to train the player to rapidly adapt to changing responses of the ball in play.

[0031] It is yet a further object of the present invention to provide such a method and apparatus as will enable a player to visually determine whether the player has correctly placed the striking member in relation to the playing object and thereby determine the accuracy of the player's swing.

[0032] These and other objectives of the present invention will become apparent in the specification and claims that follow.

[0033] It is a still further object of the present invention to provide such a method and apparatus as may be employed either by the player or by the player and an instructor for the improvement of the players swing.

[0034] It is a further object of the present invention to provide such a method and apparatus as may be inexpensively and simply employed by the player.

[0035] It is yet a further object of the present invention to provide such a method and apparatus as may be employed without requirement of a special location or playing or practice field.

SUMMARY OF THE INVENTION

[0036] The subject invention is comprised a striking member adapted to emulate a specific selected sport and a target member adapted to emulate the playing object of the same selected sport, the target member including flexible, elongate momentum elements selectively attachable to the target member to accurately simulate the characteristics of an actual ball or playing object.

BRIEF DESCRIPTION OF THE DRAWINGS

[0037] FIG. 1 shows a frontal view of a tennis training striking member.

[0038] FIG. 2 shows a cross-sectional view of the tennis striking member of FIG. 1 taken along Section lines 2-2 of FIG. 1.

[0039] FIG. 3 shows a cross-sectional view of the tennis striking member of FIG. 1 taken along Section lines 3-3 of FIG. 2.

[0040] FIG. 4 shows a tennis training apparatus and a player practicing the swing, with the follow-through shown in dotted lines.

[0041] FIG. 5 shows a cross-sectional view of the tennis target member taken along section lines 4-4 of FIG. 4.

[0042] FIG. 6 shows an enlarged partial view of the apparatus of FIG. 4 as seen during the swing.

[0043] FIG. 7 shows tennis training apparatus of FIG. 1 in a second Position for training an alternate swing and a player practicing the swing, with the momentum element shown in dotted line form.

[0044] FIG. 8 shows the tennis training apparatus according to FIG. 7 with relatively small momentum element thereon on the target member.

[0045] FIG. 9 shows the tennis training apparatus according to FIG. 7 in the follow through Position.

[0046] FIG. 10 shows an enlarged view of the target member of the tennis training apparatus according to FIG. 7.

[0047] FIG. 11 shows a baseball training apparatus according to the present invention.

[0048] FIG. 12 shows a frontal view of a baseball strike member as shown in FIG. 11.

[0049] FIG. 13 shows an alternative for the baseball training apparatus, namely a Velcro™ sleeve that could be attached to the player's own bat.

[0050] FIG. 14 shows one alternative for a hockey training apparatus.

REFERENCED NUMERALS

[0051] 10 Tennis Training Apparatus

[0052] 20 Tennis Strike Member

[0053] 22 Handle Portion

[0054] 24 Grip

[0055] 26 Extension

[0056] 28 Head Portion

[0057] 30 Arcuate Position

[0058] 32 Spherical Contact Element

[0059] 34 Connecting Rod

[0060] 36 Forward Hemisphere

[0061] 38a Fastener Strip

[0062] 38b Fastener Strip

[0063] 40 Target Support Frame

[0064] 42 Vertical Support Frame

[0065] 46 Secondary Support Frame

[0066] 48 Link Members

[0067] 50 Target Member

[0068] 52 Target Surface

[0069] 54 Secondary Fastener Surface

[0070] 56 Momentum Element

[0071] 60 Player

[0072] 70 Dependent Support Hanger Subassembly

[0073] 72 Vertical Support Arm

[0074] 74 Horizontal Support Arm

[0075] 110 Baseball Swing Training Apparatus

[0076] 120 Baseball Striking Member

[0077] 122 Handle Portion

[0078] 124 Grip

[0079] 125 Velcro™ sleeve over bat

[0080] 132 Contact Element

[0081] 134 Connecting Rod

[0082] 136 Forward Hemisphere

[0083] 138a Fastener Strip

[0084] 138b Fastener Strip

[0085] 140 Target Support Frame

[0086] 142 Vertical Support Frame

[0087] 144 Base

[0088] 146 Horizontal Secondary Support Frame

[0089] 148 Link Members

[0090] 150 Target Member

[0091] 152 Target Surface

[0092] 154 Secondary Fastener Surface

[0093] 156 Momentum Element

[0094] 310 Hockey Swing Training Apparatus

[0095] 320 Hockey Striking Member

[0096] 322 Handle Portion

[0097] 334 Connecting Rod

[0098] 338a Fastener Strip

[0099] 338b Fastener Strip

[0100] 350 Target Member

[0101] 352 Target Surface

[0102] 356 Momentum Element

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0103] A tennis training apparatus identified by the reference numeral 10 according to the present invention is disclosed generally in FIGS. 1 through 10. Those skilled in the art of sports will recognize that each of the respective sports described generally herein are played and organized according to generally accepted and prescribed rules, and that the terms "actual", "standard", "regulation", and so forth are to be taken and understood in the context of and as being substantially in compliance with those respective rules and regulations.

[0104] In FIG. 1 a training strike member 20 is shown. The tennis strike member 20 includes a handle portion 22 substantially identical with that provided on the actual tennis racquet. The handle portion 22 includes a grip 24 substantially identical with a regulation tennis racquet and an extension 26 connecting to the head portion 28 disposed at the opposing end. An arcuate portion 30 simulates the head of the tennis racquet and assists the player in maintaining the strike member in the correct attitude. A spherical contact element 32 of, for example, not less than the diameter of the regulation tennis ball, is provided at the position of the preferred strike zone, or "sweet spot", of the regulation tennis racquet. A connecting rod 34 immovably joins the contact element 32 to the handle portion 22 and ensures the relationship of the handle portion 22 and the contact element 32.

[0105] The forward hemisphere 36 of the contact element 32 is surfaced with preferably two fastener strips 38A and 38B of material which is of the selectively engageable multiple hook and loop engagement type removable fastener, such as Velcro™ brand hook and loop fastener. These two fastener material strips 38A and 38B are preferably disposed at right angles to each other. As shown, one fastener strip 38A is aligned with the axis of the connecting rod 34 and the other fastener strip 38B is normal to the axis of the connecting rod 34.

[0106] Those skilled in the art will recognize the forward hemisphere 36 may also be completely covered with fastener material or that other conformations of partial coverage with fastener material may be employed with substantially similar results, or that other types of fastener materials may be employed, and that the disposition shown is by way of example only.

[0107] Turning now more particularly to FIGS. 2 and 3, the contact element 32 can be seen in greater detail. The exemplary contact element 32 is a solid spherical member of a material which, together with the connecting rod 34,

replicates the weight and feel of the normal tennis racquet, and which also resists crushing and deformation during normal training sessions.

[0108] As shown in FIG. 3, the connecting rod 34 extends substantially into the contact element 32 to ensure that the two are firmly joined, but does not extend completely through the contact element 32.

[0109] FIG. 4 shows a tennis training apparatus 10 including the striking member 20, a target support frame 40, a target member 50, and a player 60 operating the apparatus 10. The target support frame 40 includes a vertical support frame 42 anchored in a base 44 which may be either mobile or fixed, but which in used will be disposed in a playing field or other training area. A horizontal secondary support frame 46 affixed to the vertical support frame 42 and extends generally toward the player at right angles to the vertical support frame 42. The secondary support frame 46 is generally parallel and selectively adjustable in height with respect to the ground or playing surface. This permits the target member 50 to be placed at a height selected by the player to place the target member 50 in the tennis strike zone at a selected practice height. Link members 48 are provided on the secondary support frame 46 to selectively engage the target member 50 and removably attach the target member 50 to the target support frame 40.

[0110] This selective linking engagement is more clearly shown in the enlarged side view of the link members 48 and the target member 50 shown in FIG. 5. The target member 50 is preferably a rectangular, flat member which may be of cloth, or may be of a less flexible material, removably attached to and depending from the target support frame 40 and including a target surface 52 which is surfaced with the multiple hook and loop removable fastener material for engaging similar hook and loop fastener material on the link members 48. The target surface 52 is preferably rectangular, although it may be of other geometric shapes, and will also typically include an outlined indication of the target area which is desirably to be struck by the striking member 20.

[0111] The target element 50 also includes a secondary fastener surface 54, which is a means for selectively engaging a momentum element 56. In FIG. 5, the secondary fastener surface 54 is opposite the target surface 52, although those skilled in the art will understand that the secondary fastener surface 54 may be on the same side of the target member 50 as the target surface 52. The secondary fastener surface 54 may be of a wide variety of suitable fastener materials, such as snaps or zipper 3, however, the preferred material is the multiple hook and loop fastener.

[0112] The momentum element 56 is preferably a sash of cloth or other similar material generally of the same width as the target surface 52, for example, 6 to 14 inches wide and up to 4 feet long. In FIG. 4, the momentum element 56 is shown in dashed line format to indicate that the momentum element 56 may be of varying lengths to provide a suitable momentum response, and it is believed that this will be understood by those skilled in the art. Furthermore, the momentum element 56 is not shown in the dashed line portion of the FIG. 4 which represents swing action of the player 60 so as to avoid confusion in the drawing.

[0113] As shown in FIG. 4, the player 60 is engaged in practicing a side swing or forearm swing. The player's racquet holding arm is extended laterally away from the torso with the training swing member 20 grasped by grip of the handle portion 22 thereof so as to distally extend the

head portion 32. The player is positioned adjacent the tennis training apparatus 10 and aligned with the target member 50 to strike the target member 50 in a tennis strike zone, where the tennis ball would be found. By adjusting the vertical height of the secondary support frame 46, the vertical height of the target member 50 is altered. Likewise, the player 60 can freely choose the desired horizontal or lateral positioning with respect to the target member 50. By combining differing combinations of vertical and horizontal positions, the player can simulate and train for all possible forehand swings.

[0114] Turning now to FIG. 6, an enlarged partial view of the tennis training apparatus 10 is shown in which the contact element 36 of the strike member 20 has contacted the target surface 52 and detached the target member 50 from the link members 48, causing the target member 50 to become selectively attached to the contact element 32. After the contact occurs, the target is disengaged from the target support frame and engaged to the head portion 32 which carries the target member through the remainder of the swing to simulate the actual impact. The target member 50 is then disengaged from the head portion 32. Thus, the point of contact between the strike member 20 and the target surface 52 is exactly pinpointed and determined.

[0115] FIG. 7 shows the vertical support frame 42 extended to a greater height so as to place the target member at that height which would represent full-extension of the player in an overhead swing. In FIG. 7, the player is shown at the point of beginning of a swing. In FIG. 8, the player is shown in full extension at the point of contact with the target member 50. At this point, the player experiences the same physical sensations and responses as if striking an actual tennis ball with a tennis racquet. This is the due to the fact that the striking member 20 simulates the weight and mass of the actual tennis racquet, and further due to the provision of the momentum element 56 attached to the target member 50 to simulate the momentum of the tennis ball in a game. The target member 50 is a relatively flat, typically lightweight cloth element which may be provided with lightweight stiffening structure (not shown), however, due to the lightweight nature of the target member 50, it is necessary to provide the requisite momentum by selecting and attaching the appropriate momentum element 56 to the target member 50.

[0116] In FIG. 9, the player is shown at the point of completion of the swing, with the target element 50 temporarily attached to the striking member 20. The player 60 then detaches the target member 50 from the contact element 32. In the process of detaching the target member 50 from the strike member 20, the player 60 can compare the actual result of the practice of stroke and the intended result, which is to strike the target surface 52 in the center of the target indicated. After determining the accuracy and correctness of the stroke, the player can reattach the target member 50 to the link members 48. The tennis training apparatus 40 is then prepared for the next practice stroke.

[0117] An alternative mounting method including a dependent support hanger subassembly 70 is shown in FIGS. 7, 8 and 9, and in greater detail in FIG. 10. The dependent support hanger subassembly 70 includes a vertical support arm 72 which adjoins a horizontal support arm 74 to form an inverted T attached to the secondary support frame 46. The dependent support hanger subassembly 70 is preferably attached by adjustable clamps to the secondary

support frame 46 and provides a means for further adjusting the vertical position of the target member 50, and may permit the Player to set the target member 50 to an angle with respect to the target support frame 40. Such an adjustment enables the Player to compensate for uneven practice surfaces, for example.

[0118] It will be appreciated by those skilled in the art that the target surface 52 may bear a variety of imprints or printed targeting patterns. The principal requirement of the target surface imprint is to indicate the desired point of contact to the player, and to enable the player to determine the accuracy of the player's swing.

[0119] FIG. 12 shows a player 60 employing a first alternative embodiment of the training apparatus in the form of a baseball swing training apparatus 110 including the baseball striking member 120, a target support frame 140 and a target member 150. As with the preferred embodiment, the target support frame 140 includes a vertical support frame 142 anchored in a base 144 (not shown) which may be either mobile or fixed. A horizontal secondary support frame 146 extends generally toward the player at right angles to the vertical support frame 142. The secondary support frame 146 is generally parallel to the ground at a height selected by the player to place the target member 150 in the baseball strike zone at a selected practice height. Link members 148 are provided on the secondary support frame 46 with means to selectively engage the target member 150 and link the target member 150 to the target support frame 140 in substantially the same manner as the preferred embodiment.

[0120] The baseball striking member 120 includes a handle portion 122 substantially identical with that provided on the actual baseball bat with a grip 124 of the same dimensions as that commonly found in professional baseball bats. A spherical contact element 32, preferably of substantially the same diameter as a regulation baseball, is provided at the proximate position of the preferred strike zone of an actual baseball bat. A connecting rod 134 immovably joins the contact element 32 to the handle portion 22 and ensures the relationship of the handle portion 122 and the contact element 132.

[0121] The forward hemisphere 136 of the contact element 132 is surfaced with preferably two fastener strips 138A and 138B of material which is of the selectively engageable multiple hook and loop engagement type, such as Velcro™ brand hook and loop fastener. These two fastener material strips 138A and 138B are preferably disposed at right angles to each other. As shown, one fastener strip 138A is aligned with the axis of the connecting rod 134 and the other fastener strip 138B is normal to the axis of the connecting rod 134.

[0122] Those skilled in the art will recognize the forward hemisphere 136 may also be completely covered with fastener material or that other conformations of partial coverage with fastener material may be employed with substantially similar results, or that other types of fastener materials may be employed, and that the disposition shown is by way of example only.

[0123] The target element 150 also includes a secondary fastener surface 154 for engaging a momentum element 156. In FIG. 12, the secondary fastener surface 154 is opposite the target surface 152. The momentum element 156 depends from the target member 150, leaving the target surface exposed for engagement with the contact element 132. This is shown in FIG. 11, with the contact element 132 shown in dotted line behind the target surface 152.

[0124] The player in training employs the baseball training apparatus 110 in much the same manner as the preferred embodiment is used for the tennis player. However, all training for striking a pitched baseball is done with swings through the baseball strike zone, so the method is most similar to that of the tennis forehand, although both hands are used to grip the handle 122. The player in training grasps the handle 122 of the baseball striking member 120 and assumes the batting position adjacent the baseball training apparatus 110, with the target member 150 depending from the link members 148 and adjusted to a selected height in the baseball strike zone. A momentum element 156 is attached to the target member 150 to cause the desired response when the contact element 132 strikes the target surface 152. The player then swings the strike member 120 and contacts the target surface 152, causing the fastener surfaces 138A and 138B to removably engage the target surface 152 and carry the target member 150 from the target support frame, disengaging the link members 148. As with the preferred embodiment, the player can then disengage the target member 150 from the contact element 132 and examine the target surface 152 to determine the accuracy of the swing, reattach the target member 150 to the baseball training apparatus 110 and continue training with another subsequent swing, which can be repeated as desired.

[0125] A hockey swing training apparatus 310 is shown in FIG. 15. A handle portion 322 of the hockey training striking member 320 extends upwardly at an angle emulating that of the regulation hockey stick. At the lower end of the handle portion 322 a connecting rod 334 extends horizontally from the handle portion 322 and mounts a contact element 332 to the handle portion 322. As with the tennis striking member 20, the hockey contact element 332 is spherical with two fastener strips 338A and 338B affixed thereon for engaging a target member 350. The target member 350 has an upwardly extending target surface 352 which simulates the puck in the hockey strike zone and which further includes fastener material of the same type as that of the fastener strips 338A and 338B, and a momentum element 356 for inducing the physical response experienced during a swing in actual play. The player 60 is not shown, but the steps involved in the employment of the invention are substantially the same in this embodiment as in the previous embodiment. And, of course, you could just have a Velcro™ sleeve that fits over the Player's hockey stick, similar to the alternative baseball sleeve in FIG. 13.

[0126] Construction of the various strike members should be such as would provide the necessary durability for repeated training swings. For example, the handle portion of the tennis strike member should be of substantially the same construction as that of the standard tennis racquet. The contact elements of the respective strike members should likewise be formed from a durable plastic or metal as will provide the desired mass and weight balance to simulate the regulation bat or stick, as the case may be. It is believed that those skilled in the respective arts will readily apprehend the nature of the required materials.

[0127] As can be seen, the various embodiments are of relatively straightforward construction, and permit the player to train conveniently and safely. Furthermore, the training apparatus provide a simple and effective means of improving the swing required in selected sport due to the instant and accurate feedback and the positive physical training provided by the present invention. The player's

swing under the actual gaming conditions is substantially enhanced by the tactile feedback experienced during training, especially the accurate tactile feedback provided by the momentum element when attached to the target member during the practice session. This accurate tactile feedback enables the player in training to train for an accurate physical response to the swing. In addition, the present invention is relatively simple of manufacture and maintenance. Also, the present invention is inexpensive to use and to operate, and can be used in cooperation with other training methods to provide improved training where desired.

[0128] Modifications to the preferred embodiment of the subject invention will be apparent to those skilled in the art within the scope of the claims that follow.

What is claimed is:

1. A tennis training apparatus comprised of a tennis striking member having a handle portion and an oppositely disposed head portion including a removable fastener strip;

a target support frame which may be disposed in a playing field;

a target member removably attached to and depending from the target support frame in the tennis strike zone, said target member including a target surface having a removable fastener thereon for removable engagement with said tennis striking member upon contact with said head portion thereof.

2. The tennis training apparatus as set forth in claim 1 wherein said target support frame further includes a vertical support frame.

3. The tennis training apparatus as set forth in claim 2 wherein said target support frame further includes a secondary support frame fixed to said vertical support frame.

4. The tennis training apparatus as set forth in claim 3 wherein said tennis training apparatus further includes a link member for removably engaging said target member.

5. The tennis training apparatus as set forth in claim 4 wherein said secondary support frame is selectively adjustable in height with respect to the playing surface.

6. The tennis training apparatus as set forth in claim 1 wherein said target member further includes means for selectively engaging a momentum element.

7. The tennis training apparatus as set forth in claim 6 wherein said momentum element is a rectangular cloth.

8. The tennis training apparatus as set forth in claim 7 wherein said means for selectively engaging said momentum element is further comprised of a multiple hook and loop fastener.

9. The tennis training apparatus as set forth in claim 1 wherein the handle portion of said tennis striking member further includes a grip to be grasped by a player.

10. The tennis training apparatus as set forth in claim 9 wherein the head portion of said tennis striking member further includes a contact element.

11. The tennis training apparatus as set forth in claim 10 wherein said removable fastener strip is affixed to said contact element.

12. The tennis training element as set forth in claim 11 wherein said contact element is a sphere having a diameter not less than the diameter of a regulation tennis ball.

13. The tennis training element as set forth in claim 12 wherein said contact element is secured to said handle portion by a connecting rod.

14. The tennis training apparatus as set forth in claim 13 wherein said contact element is disposed in the preferred strike zone of a regulation tennis racquet.

15. The method of training the swing of a tennis player, the method comprising the steps of providing a tennis striking member having a handle portion and an oppositely disposed head portion including a removable fastener strip; providing a target support frame in a playing field; removably attaching a target member having a target surface to depend from said target support frame; adjusting the target member to a selected height in the tennis strike zone;

grasping the handle portion of the tennis strike member; swinging the tennis strike member and striking and removably engaging the target surface with the head portion of the tennis strike member and disengaging the target member from the target support frame; carrying the target member through the remainder of the swing to simulate the actual swing; and disengaging the target member from the head portion of the striking member to determine the point of contact there between.

16. The method as in claim 15 wherein the method of training the swing of a tennis player includes the further step of attaching a selectively removable momentum element to the target member while the target member is depending from the target support frame.

17. A baseball training apparatus comprised of: a baseball striking member having a handle portion and an oppositely disposed head portion including a removable fastener strip;

a target support frame which may be disposed in a playing field; a target member removably attached to and depending from the target support frame in the baseball strike zone, said target member including a target surface having a removable fastener thereon for removable engagement with said baseball striking member upon contact with said head portion thereof.

18. The baseball training apparatus as set forth in claim 17 wherein said target support frame further includes a vertical support frame.

19. The baseball training apparatus as set forth in claim 18 wherein said target support frame further includes a secondary support frame fixed to said vertical support frame.

20. The baseball training apparatus as set forth in claim 19 wherein said baseball training apparatus further includes a link member having means for removably engaging said target member.

21. The baseball training apparatus as set forth in claim 20 wherein said secondary support frame is selectively adjustable in height with respect to the playing surface.

22. The baseball training apparatus as set forth in claim 17 wherein said target member further includes means for selectively engaging a momentum element.

23. The baseball training apparatus as set forth in claim 22 wherein said momentum element is a rectangular cloth.

24. The baseball training apparatus as set forth in claim 23 wherein said means for selectively engaging and mounting said momentum element is further comprised of a multiple hook and loop fastener.

25. The baseball training apparatus as set forth in claim 17 wherein the handle portion of said baseball striking member further includes a grip to be grasped by a player.

26. The baseball training apparatus as set forth in claim **25** wherein the head portion of said baseball striking member further includes a contact element.

27. The baseball training apparatus as set forth in claim **26** wherein said removable fastener strip is affixed to said contact element.

28. The baseball training element as set forth in claim **27** wherein said contact element is a sphere having a diameter substantially the same diameter as a regulation baseball.

29. The baseball training element as set forth in claim **28** wherein said contact element is secured to said handle portion by a connecting rod at the proximate position of the preferred strike zone.

30. The baseball training apparatus as set forth in claim **29** wherein said contact element is disposed in the preferred strike zone of a regulation baseball bat.

31. The method of training the swing of a baseball player, the method comprising the steps of:

providing a baseball striking member having a handle portion and an oppositely disposed head portion including a removable fastener strip;

providing a target support frame in a playing field; removably attaching a target member having a target surface to depend from said target support frame;

adjusting the target member to a selected height in the baseball strike zone;

grasping the handle portion of the baseball strike member; swinging the baseball strike member and striking and removably engaging the target surface with the head portion of the baseball strike member and disengaging the target member from the target support frame;

carrying the target member through the remainder of the swing to simulate the actual swing; and disengaging the target member from the head portion of the striking member to determine the point of contact therebetween.

32. The method as in claim **31** wherein the method of training the swing of a baseball player includes the further step of attaching a selectively removable momentum element to the target member while the target member is depending from the target support frame.

33. A hockey training apparatus comprised of a hockey striking member having a handle portion and an oppositely disposed head portion including a removable fastener strip;

a moveable target member including a generally vertically upstanding target surface having a removable fastener thereon for removable engagement with said hockey striking member upon contact with said head portion thereof, said target member further having a horizontal, freestanding base;

and a momentum element selectively, removably attached to said base of said target element.

34. The hockey training apparatus as set forth in claim **39** wherein the head portion of said hockey striking member further includes a contact element.

35. The hockey training apparatus as set forth in claim **40** wherein said removable fastener strip is affixed to said contact element.

36. The hockey training element as set forth in claim **41** wherein said contact element is a sphere.

37. The hockey training element as set forth in claim **42** wherein said contact element is secured to said handle portion by a connecting rod at the proximate position of the preferred strike zone.

38. The hockey training apparatus as set forth in claim **43** wherein said contact element is disposed in the preferred strike zone of a regulation hockey stick.

39. The hockey training apparatus as set forth in claim **39** wherein said momentum element is rectangular.

40. The hockey training apparatus as set forth in claim **45** wherein said momentum element is cloth.

41. The hockey training apparatus as set forth in claim **46** wherein said momentum element further includes means for selectively attaching a second momentum element to said momentum element.

42. The method of training the swing of a hockey player, the method comprising the steps of:

providing a hockey striking member having a handle portion and an oppositely disposed head portion including a removable fastener strip;

providing a moveable target member including a generally vertically upstanding target surface having a removable fastener thereon for removable engagement with said hockey striking member upon contact with said head portion thereof, said target member further having a horizontal, freestanding base;

adjusting the target member to a selected position in the hockey puck strike zone;

attaching a momentum element selectively, removably attached to said base of said target element;

grasping the handle portion of the hockey strike member; swinging the hockey strike member and striking and removably engaging the target surface with the head portion of the hockey strike member;

carrying the target member through the remainder of the swing to simulate the actual hockey swing; and disengaging the target member from the head portion of the hockey striking member to determine the point of contact therebetween.

43. The method of training the swing of a hockey player as set forth in claim **48** wherein the step of attaching a momentum element includes the further step of attaching a second momentum element to said momentum element by a means for selectively attaching said second momentum element.

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