An advanced baseball training base pad for repetitive teaching of proper base running is disclosed. Generally, the optimum pace to contact a base while rounding bases is the inside corner; therefore, sensors configured to the base pad provide indication/feedback to a user as to the part of the base pad being contacted. Alternative embodiments are provided showing different configurations of sensor arrays and multiple base pad portions that can be contacted by a base runner.
BASE PAD HAVING TOUCH SENSING CAPABILITIES

PRIORITY CLAIM

[0001] This patent application contains subject matter claiming benefit of the priority date of U.S. Prov. Pat. App. Ser. No. 61/709,099 filed on Oct. 2, 2012 and entitled, BASE PAD HAVING TOUCH SENSING CAPABILITIES; additionally this patent application contains subject matter claiming benefit of the priority date of U.S. Prov. Pat. App. Ser. No. 61/820,075 filed on May 6, 2013 and entitled INTEGRATED BASE PAD TIMER, accordingly, the entire contents of these provisional applications are hereby expressly incorporated by reference.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention pertains generally to baseball training equipment. More specifically, the invention relates to baseball base pads that are especially designed for teaching base runners the most efficient means to run the bases by providing audible or visual alarms when the runner strikes the wrong part of the base with his/her foot to alert the runner that he/she is not running the correct and most efficient path around the bases. In yet another embodiment, baseball base pads are provided with transmitters and timers providing feedback to an athlete further employing a smart phone application.

[0004] 2. Description of the Prior Art

[0005] Baseball has been very popular over the years and is often referred to as our country’s oldest and most favorite pastime. Numerous baseball related inventions have been proposed heretofore; and more particularly, many are specifically related to base pad inventions. An early example of a base pad invention having indication means was proposed by E. Friedman and was granted U.S. patent protection in 1948, entitled “Indicating System for Baseball Games,” U.S. Pat. No. 2,440,042. Generally this patent describes a baseball base pad that visually indicates when a base runner strikes the base anywhere; in addition to indicating when a baseball infielder touches the pad anywhere.

[0006] A second example was proposed by Willett entitled “Safety Base for Athletic Events,” U.S. Pat. No. 3,938,804. This particular example attempts to avoid collisions between base runner and infielder attempting to make a tag out by partitioning the base with safe runner or fielder sections. A yet further another example was invented by West et al. entitled “Base with Rigid Corner Section,” U.S. Pat. No. 6,296,584.

[0007] The base pad invention field is generally crowded and the different configurations depend on whichever objectives the invention discloses. According to West and his co-inventor, baseball and/or softball bases heretofore devised and utilized are known to consist basically of familiar, expected and obvious structural configurations, notwithstanding the myriad of designs encompassed by the crowded prior art which have been developed for the fulfillment of countless objectives and requirements.

[0008] Aside from the extensive background of baseball base pad devices, none of the prior art solutions address a training base pad to help train baseball or softball youths to run bases properly. Accordingly, it is an object of the present invention to provide a base pad training device that will provide sensor feedback to a base runner to help in training a correct way to run bases. It is an additional object of the present invention to provide a fun method to train young baseball players a proper way to run bases so that such training will be a matter of subconscious routine for older baseball players.

[0009] Additionally, devices and related methods for automatically timing runners have been proposed heretofore. One such example is provided by Frederick, U.S. Pat. No. 4,578,769, entitled “Device for Determining The Speed, Distance Traversed, Elapsed Time and Calories Expended by a Person While Running.” Essentially, Frederick offers a device and method to calculate speed in distance using transmitters and transponders coupled to a user’s shoe that further employ a relationship between foot contact time and distance/speed. While some interesting concepts are provided therein, the system is overly complex to be a useful solution to automated base pad timing.

[0010] Accordingly still, it is an object of the present invention to provide a base pad training device that will provide sensor feedback to a base runner to help in training a correct way to run bases. Yet further it is an object of the present invention to provide sensing, timing and transmitting capability for use with a smart phone device.

BRIEF SUMMARY OF THE INVENTION

[0011] The present invention specifically addresses and alleviates the above mentioned deficiencies associated with the prior art. More particularly, the present invention in a first aspect, is directed to a baseball base pad comprising: a quadrilateral substrate being a quadrilateral (or square) in a top aspect; a plurality of sensors configured to the quadrilateral substrate; an upper base pad area configured on top of the quadrilateral substrate and in the same footprint, wherein the plurality of sensors provide indication as to a specific area of the base pad being contacted during a base running event.

[0012] The baseball base pad herein is additionally characterized as comprising a mounting base configured to an underside of the quadrilateral substrate, the mounting base comprising a post for mating with a complementary hole for base pad securing purposes. Further, the mounting base is configured to the underside of the quadrilateral substrate at an offset of 45 degrees with respect to each other. In an alternative embodiment, the mounting base is devoid of a post for flat mating to a ground surface such as an outfield grass.

[0013] The baseball base pad in this aspect is additionally characterized in that the upper base pad area comprises a square shape in a top aspect, the square upper base pad area having segmented and separate portions including an first outside larger rectangular portion adjacent to a second inside smaller rectangular portion, further wherein the segmented portions include a pie wedge portion taken out of both first and second rectangles wherein thereby the segmented portions include a pie wedge, a first rectangle having a corner thereof removed and a second rectangle have a corner thereof removed, wherein first outside larger rectangular portion is larger with respect to the smaller rectangular portion.

[0014] Also according to the invention in this aspect, the pie wedge is a first preferred portion having an indication as such when contacted by a base runner, and wherein the second rectangular portion is a second preferred portion having an indication as such when contacted by a base runner and wherein the first outside larger rectangular portion is a third preferred portion as compared to the first and second preferred portions.
[0015] User indications are chosen from any combination of a light, a speaker or a signal transmitted to an electronic device. The device further has a printed circuit board (PCB) electronically coupled to the plurality of sensors; and a battery further configured to each of the PCB and the plurality of sensors. The PCB also includes a clock (or an electronic time keeper); and a transmitter or a transceiver for indication and/or command and control of the device (via smart phone application, for example).

[0016] In yet another aspect, the invention is a baseball base pad comprising: an interior comprised of semi cushioning material; an outer skin surrounding the interior; a plurality of sensors configured to the interior and within the outer skin; and an indicator, the indicator comprising a visual indication, an audible indication, or an electronic indication.

[0017] Also, the plurality of sensors comprises first and second separated portions, wherein a first portion is generally a pie shaped wedge at an inner most corner of the base pad and wherein the second separated sensor portion is a remaining portion of the pad. As in the first aspect, the invention includes a printed circuit board (PCB) electronically coupled to the plurality of sensors; and a rechargeable battery further configured to each of the PCB and the plurality of sensors. It also has the electronic timekeeper and transmitter for command and control.

[0018] In still another aspect, the invention is a system for monitoring a running of a baseball base pads comprising: a first base pad having a plurality of pressure sensitive sensors configured thereto; a transceiver (or transmitter) configured to the first base pad; and a smart device in wireless communication with the transmitter providing electronic indication regarding contact of the plurality of pressure sensors. The system further includes a second a base pad having a plurality of pressure sensitive sensors configured thereto; a third base pad having a plurality of pressure sensitive sensors configured thereto; and a home plate having a plurality of pressure sensitive sensors configured thereto. An electronic time keeper coupled to a PCB determines base runner time. It is additionally contemplated that the smart phone device has the time keeper of the present invention.

[0019] These, as well as other advantages of the present invention will be more apparent from the following description and drawings. It is understood that changes in the specific structure shown and described may be made within the scope of the claims, without departing from the spirit of the invention.

[0020] While the apparatus and method has or will be described for the sake of grammatical fluidity with functional explanations, it is to be expressly understood that the claims, unless expressly formulated under 35 USC 112, are not to be construed as necessarily limited in any way by the construction of “means” or “steps” limitations, but are to be accorded the full scope of the meaning and equivalents of the definition provided by the claims under the judicial doctrine of equivalents, and in the case where the claims are expressly formulated under 35 USC 112 are to be accorded full statutory equivalents under 35 USC 112. The invention can be better visualized by turning now to the following drawings wherein like elements are referenced by like numerals.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] The novel features of this invention, as well as the invention itself, both as to its structure and its operation, will be best understood from the accompanying drawings, taken in conjunction with the accompanying description, in which similar reference characters refer to similar parts, and in which:

[0022] FIG. 1 is a sketch showing proper and improper paths for base running;

[0023] FIG. 2A and FIG. 2B each illustrate a preferred base pad of the present invention from a front vantage point;

[0024] FIG. 2C illustrates a preferred base pad as shown in FIG. 2B from a rear vantage point;

[0025] FIG. 3A is top plan view of a second preferred embodiment of the present invention;

[0026] FIG. 3B is a front view thereof;

[0027] FIG. 3C is a profile view the second preferred embodiment;

[0028] FIG. 3D is a bottom view of the second preferred embodiment;

[0029] FIG. 3E illustrates an exploded view thereof; and

[0030] FIG. 3F is a top view of a substrate portion of the second preferred embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0031] Various inventive features are described below that can each be used independently of one another or in combination with other features. Initially with regard to FIG. 1, a baseball diamond including an infield grass 10 is shown in schematic form. A baseline 11, 12 is essentially a path a base runner takes when attempting to reach a base safely. White lines 19 are provided stretching generally from home plate 24 to edges of first 21 and third 23 bases and beyond to outfield foul poles (not shown). Further, when traversing more than one base, base runners will typically “round” the bases 21, 22, 23, 24 instead of turning at right angles which would be impossible to do at full speed. As illustrated, a first base 11 path is shown as optimal wherein a runner only contacts the inside corner of each bag 21, 22, 23. A second, incorrect path 12, illustrates the added distance to a base runner (approximately six feet) that simply contacts a middle of a bag 21, 22, 23.

[0032] With reference to FIG. 2A, a preferred device 21 of the present invention is illustrated in perspective. In the most broad sense, the invention is directed to a system of several base pads (i.e. first 21, second 22 and third 23 bases) configured with sensors 61, 62 to help train base runners to travel the most optimum path 11 for running bases (FIG. 1). As best seen in FIG. 1, the optimal base running technique comprises rounding the bases 21, 22, 23 by touching an inner left corner 51 of the base pad. With regard to FIG. 2B and FIG. 2C, sensors are placed throughout the inner portions of the base pad so that either the correct 11 or incorrect 12 path is indicated.

[0033] More specifically with regard to the plurality of sensors 42, or sensor array, configured throughout the base pad 21, 31, they may be designed as different types. For example, pressure sensors such as a piezoelectric type may make up such array 42. Alternatively, sensors 42 that simply measure displacement could be employed. And, if sensors triggered across both/multiple regions 51, 52, 53, 54 of the base pad 21, 31 are possible, then a comparator circuit could be employed. Also alternatively, compression of the base pad 21, 31 in the applicable region could cause two contacts to touch and close an electrical circuit connection to one or preferred indicators 61, 62.
Also with regard to FIG. 2B and FIG. 2C the base pad 21 has an interior comprised of semi cushioning material and an outer skin 81 surrounding the interior.

Also regarding indicators of the present invention, sight 62 and/or sound 61 indicators could be employed as favored by a user. For example, various combinations of LED 62 (e.g. red-improper, green-proper) lights could be used as well as various audible speaker 61 tones. In the embodiment illustrated in FIG. 2C, speakers 61 are provided on a backside and a baseline side (as in the first base pad example) of the base pad. An ON/OFF switch 63 is also provided on the bag backside. As shown in FIG. 1, a base runner consistently missing the inside 51 of a base pad will run up to six feet farther in linear distance.

With reference to FIG. 3A through FIG. 3E, various views of a second preferred embodiment 31 are illustrated. As best seen in FIG. 3A and FIG. 3E, the base pad 51 is divided into three regions 51, 53, 54 instead of just two 51, 52 corresponding to “right” and “wrong” (FIG. 2A through FIG. 2C). A second region is being provided that comprises a front portion 54 of the base pad approximately six inches deep. This second region 54 is particularly useful for training a base runner attempting to beat out a call at first base 31. Specifically, it is typical for the base runner running through first base to beat out a throw or otherwise be thrown out at first base by a slim margin, for example on the order of a few thousandths of a second. Hence, it would stand to reason, that a runner should be really focused on hitting the front part 54 of the bag as hitting the middle or after 53 part of the bag will surely cost crucial time.

Stated differently, the upper base pad area 50 has a square shape in a top aspect. The square upper base pad area 50 further has segmented and separate portions including an first outside larger rectangular portion 53 adjacent to a second inside smaller rectangular portion 54, further wherein the segmented portions include a pie wedge portion 51 taken out of both first and second rectangles 53, 54 wherein the segmented portions include a pie wedge 51, a first rectangle 53 having a corner thereof removed and a second rectangle 53 having a corner thereof removed. More particularly, the “larger” rectangular portion 53 is as such compared to the “smaller” portion 54.

Also referring more specifically to exploded view FIG. 3E, an alternative to the plurality of sensors 42 imbedded within the base pad (FIG. 2A through FIG. 2C) is shown. Herein, the base pad has multiple sensors 42 configured to a substrate 41 being a quadrilateral (or square) in a top aspect; and further the base pad 31 (upper pad area 50) with different regions 51, 53, 54 is configured on top of the substrate 41. In addition to the optimal method of hitting the inside corners 51 of a base pad 21, 31 also the front six inches can be viewed as a second preferred portion providing three distinct regions 51, 53, 54 to the base pad 31.

With specific reference to FIG. 3D, a speaker 61 is configured to an underside of a substrate 41. Further, an offset angle between the mounting base of 45 degrees is preferred as shown. It is expressly stated that a zero degree angle is not an offset angle. In a preferred embodiment, the speaker 62 is a simple speaker capable of providing a bell sound (e.g. correct base pad touch) or a buzzer (e.g. incorrect base pad touch). Alternatively, the speaker 61 could be coupled to a more complicated sound circuit capable of song or human voice playback. Additionally batteries 64 and a simple circuit board 60 can be configured between the substrate 41 and the base pad 50 different regions 51, 53, 54 (FIG. 3F). A mount base 70 is further configured underneath the substrate having a top surface adjacent to the speaker for engaging a playing surface having a complementary aperture 72.

Importantly, the present invention is for training purposes and therefore the post 71 may be absent from the base pad 31 typically coupled to a post holes 72 provided in a baseball diamond as defined by a baseline 19. Hence, base pads 31 can simply be placed in an outfield grass or other flat surface.

With reference to the FIG. 3E and FIG. 3F, a fundamental component to the present invention 31 is a pressure sensor matrix 41, or sensor matrix. This determines when and where a base pad 31 is touched by a base runner. The sensors are further coupled to a timer and a low power, short range transmitter to provide base pad running time to a user. In the preferred embodiment, the clock and transmitter are configured to the PCB 60 in a fashion known to the art. In a preferred system herein, a smart phone application is employed to calculate base pad time, speed, and further provide improvements and trends regarding a particular base runner. It is additionally contemplated that command and control could be provided to the system via the smart phone wherein the base pad 31 is configured with both a radio frequency transmitter and receiver.

Many alterations and modifications may be made by those having ordinary skill in the art without departing from the spirit and scope of the invention. Therefore, it must be understood that the illustrated embodiments have been set forth only for the purposes of example and that it should not be taken as limiting the invention as defined by the following claims. For example, notwithstanding the fact that the elements of a claim are set forth below in a certain combination, it must be expressly understood that the invention includes other combinations of fewer, more or different elements, which are disclosed in above even when not initially claimed in such combinations.

While the particular Base Pad Having Touch Sensing Capabilities as herein shown and disclosed in detail is fully capable of obtaining the objects and providing the advantages herein before stated, it is to be understood that it is merely illustrative of the presently preferred embodiments of the invention and that no limitations are intended to the details of construction or design herein shown other than as described in the appended claims.

Insufficient changes from the claimed subject matter as viewed by a person with ordinary skill in the art, now known or later devised, are expressly contemplated as being equivalently within the scope of the claims. Therefore, obvious substitutions now or later known to one with ordinary skill in the art are defined to be within the scope of the defined elements.

What is claimed is:

1. A baseball base pad comprising:
   a. a quadrilateral substrate being a quadrilateral in a top aspect;
   b. a plurality of sensors configured to the rectangular substrate;
   c. an upper base pad area configured on top of the quadrilateral substrate and substantially in the same footprint, wherein the sensors provide indication as to a specific area of the base pad being contacted during a base running event.
2. The baseball base pad of claim 1, further comprising a mounting base configured to an underside of the quadrilateral substrate, the mounting base comprising a post for mating with a complementary hole for base pad securing purposes.

3. The baseball pad of claim 2, wherein the mounting base is configured to the underside of the quadrilateral substrate at an offset of 45 degrees with respect to each other.

4. The baseball base pad of claim 1, further comprising a mounting base configured to an underside of the rectangular substrate, wherein the mounting base is devoid of a post for flat mating to a ground surface.

5. The baseball base pad of claim 1, the upper base pad area comprising a square shape in a top aspect, the square upper base pad area having segmented and separate portions including an first outside larger rectangular portion adjacent to a second inside smaller rectangular portion, further wherein the segmented portions include a pie wedge portion taken out of both first and second rectangles wherein thereby the segmented portions include a first wedge, a first rectangle having a corner thereof removed and a second rectangle having a corner thereof removed, wherein first outside larger rectangular portion is larger with respect to the smaller rectangular portion.

6. The baseball base pad of claim 3 wherein the pie wedge is a first preferred portion having an indication as such when contacted by a base runner, and wherein the second rectangular portion is a second preferred portion having an indication as such when contacted by a base runner and wherein the first outside larger rectangular portion is a third preferred portion as compared to the first and second preferred portions.

7. The baseball base pad of claim 1 wherein the indication comprises a light, a speaker or a signal transmitted to an electronic device.

8. The baseball base pad of claim 1, further comprising: a printed circuit board (PCB) electronically coupled to the plurality of sensors; and a battery further configured to each of the PCB and the plurality of sensors.

9. The baseball base pad of claim 8, the printed circuit board comprising: a clock; and a transmitter or a transceiver.

10. A baseball base pad comprising: an interior comprised of semi cushioning material; an outer skin surrounding the interior; a plurality of sensors configured to the interior and within the outer skin; and an indicator, the indicator comprising a visual indication, an audible indication, or an electronic indication.

11. The baseball base pad of claim 10, the plurality of sensors comprising first and second separated portions, wherein a first portion is generally a pie shaped wedge at an inner most corner of the base pad and wherein the second separated sensor portion is a remaining portion of the pad.

12. The baseball base pad of claim 10, further comprising a printed circuit board (PCB) electronically coupled to the plurality of sensors; and a rechargeable battery further configured to each of the PCB and the plurality of sensors.

13. The baseball base pad of claim 10, the printed circuit board comprising: a clock; and a transmitter or a transceiver.

14. A system for monitoring an athlete running of the baseball base pads comprising: a first base pad having a plurality of pressure sensitive sensors configured thereto; a transmitter configured to the first base pad; and a smart device in wireless communication with the transmitter providing electronic indication regarding contact of the plurality of pressure sensors.

15. The system for monitoring an athlete running of the baseball base pads of claim 13 further comprising: a second base pad having a plurality of pressure sensitive sensors configured thereto; a third base pad having a plurality of pressure sensitive sensors configured thereto; and a home plate having a plurality of pressure sensitive sensors configured thereto.

16. The system for monitoring an athlete running of the baseball base pads of claim 13 further comprising: a printed circuit board having the transmitter; and an electronic time keeper for determining base runner time.

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