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BATTING PRACTICE DEVICE

Abstract

A batting practice device is provided. The device is designed to enhance training for baseball and softball players by enabling practice on launch angles and providing advanced feedback. The device comprises a hollow, weather-resistant base filled with dense material for stability and features built-in wheels for portability. A primary support pole with optional reinforcement supports a multi-height adjustable target member that catches balls, enabling the practice of specific trajectories like ground balls, line drives, or fly balls. The target member's height is adjustable using a locking mechanism. An adjustable tee with mechanisms for height, lateral, and angular adjustments simulates diverse pitch scenarios. Integrated sensors measure ball speed, launch angle, and distance, displaying data on an electronic interface for real-time feedback. An optional camera and AI software analyze swing mechanics, providing detailed performance insights, slow-motion replays, and recommendations to improve hitting techniques.

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATION [0001] The present application claims priority to, and the benefit of, U.S. Provisional Application No. 63/555,616, which was filed on Feb. 20, 2024, and is incorporated herein by reference in its entirety.

FIELD OF THE INVENTION
[0002] The present invention relates generally to the field of baseball and softball training devices. More specifically, the present invention relates to a baseball and softball training device that enables the practicing of launch angles and provides advanced feedback through features such as a height-adjustable target member, a height-adjustable tee, and integrated sensors. Accordingly, the present disclosure makes specific reference thereto. Nonetheless, it is to be appreciated that aspects of the present invention are also equally applicable to other like applications, devices, and methods of manufacture.
BACKGROUND
[0003] In sports such as baseball and softball, consistent and effective hitting is a fundamental skill that requires precise technique and continuous practice. One critical aspect of batting is the ability to control the launch angle of the ball, as this determines the trajectory and type of hit, such as ground balls, line drives, or fly balls. However, many players face challenges in practicing and perfecting launch angles during training sessions. Traditional batting practice often lacks the necessary tools to provide accurate feedback or simulate realistic ball trajectories. Without proper equipment, players are unable to focus on refining specific launch angles, which can hinder their overall development as hitters. Furthermore, existing batting training devices often lack portability, durability, and adjustability, making them impractical for varied training environments or for simulating diverse pitch scenarios. As a result, there is a pressing need for a training device that not only enables targeted practice of launch angles but also provides real-time feedback to help players evaluate and improve their performance. Such a device would allow players to fine-tune their techniques and maximize their effectiveness in real-game situations.
[0004] Therefore, there exists a long-felt need in the art for a batting practice device that allows players to practice and refine specific launch angles. There also exists a long-felt need in the art for a batting practice device that provides real-time feedback on key performance metrics, such as ball speed, trajectory, and launch angle. Moreover, there exists a long-felt need in the art for a batting practice device that is durable, portable, and adjustable to accommodate diverse training scenarios and environments.
[0005] The subject matter disclosed and claimed herein, in one embodiment thereof, comprises a batting practice device. The device is designed to enhance training for baseball and softball players by enabling practice on launch angles and providing advanced feedback. The device comprises a hollow, weather-resistant base filled with dense material for stability and features built-in wheels for portability. A primary support pole with optional reinforcement supports a multi-height adjustable target member that catches balls, enabling the practice of specific trajectories like ground balls, line drives, or fly balls. The target member's height is adjustable using a locking

mechanism. An adjustable tee with mechanisms for height, lateral, and angular adjustments simulates diverse pitch scenarios. Integrated sensors measure ball speed, launch angle, and distance, displaying data on an electronic interface for real-time feedback. An optional camera and AI software analyze swing mechanics, providing detailed performance insights, slow-motion replays, and recommendations to improve hitting techniques.

[0006] In this manner, the batting practice device of the present invention accomplishes all the forgoing objectives and provides a training device for baseball and softball players to practice specific hitting launch angles and that also provides real-time feedback on critical performance metrics, such as ball speed and trajectory, allowing players to monitor and refine their hitting techniques. Further, the inclusion of an adjustable tee with height, lateral, and angular adjustment mechanisms further enhances its versatility, allowing players to simulate a wide range of pitch scenarios. Additionally, advanced features such as a built-in camera and AI-assisted tracking software provide swing analysis and recommendations. By addressing the need for precise training, feedback, and portability, the batting practice device offers a comprehensive solution for improving batting performance in baseball and softball.

SUMMARY

[0007] The following presents a simplified summary to provide a basic understanding of some aspects of the disclosed innovation. This summary is not an extensive overview, and it is not intended to identify key/critical elements or to delineate the scope thereof. Its sole purpose is to present some general concepts in a simplified form as a prelude to the more detailed description that is presented later.

[0008] The subject matter disclosed and claimed herein, in one embodiment thereof, comprises a batting practice device. The batting practice device assists athletes in practicing launch angles during training for sports such as baseball and softball. The device comprises a weather-resistant hollow base, designed to be filled with water or sand for stability, and includes a removable threaded cap with a rubber gasket for a watertight seal.

[0009] A primary support pole attaches to the base, optionally reinforced by secondary support members for stability. A target member is attached to the pole, wherein a locking mechanism secures the pole at a desired height.

[0010] An adjustable tee with a telescoping body allows height, lateral, and angular adjustments for various hitting scenarios. The tee may be comprised of a locking mechanism, height markings, a sliding track for lateral adjustments, and a tilting mechanism for angular positioning. These adjustments simulate a range of pitch types and entry angles.

[0011] The device may also include embedded sensors to measure metrics such as ball speed, launch angle, and distance that are displayed on an electronic interface or mobile application. An optional camera, integrated with AI tracking software, records swing mechanics, offering detailed feedback, slow-motion replays, and comparisons with preloaded videos to enhance training effectiveness.

[0012] A method for using the device involves filling the base for stability, configuring the target member's height, adjusting the tee's height and position, and utilizing sensors and cameras for performance feedback.

[0013] Accordingly, the batting practice device of the present invention is particularly advantageous as it provides a training device for baseball and softball players to practice specific hitting launch angles and that also provides real-time feedback on critical performance metrics, such as ball speed and trajectory, allowing players to monitor and refine their hitting techniques. Further, the inclusion of an adjustable tee with height, lateral, and angular adjustment mechanisms further enhances its versatility, allowing players to simulate a wide range of pitch scenarios. Additionally, advanced features such as a built-in camera and AI-assisted tracking software provide swing analysis and recommendations. By addressing the need for precise training, feedback, and portability, the batting practice device offers a comprehensive solution for improving batting

performance in baseball and softball.
[0014] To the accomplishment of the foregoing and related ends, certain illustrative aspects of the disclosed innovation are described herein in connection with the following description and the annexed drawings. These aspects are indicative, however, of but a few of the various ways in which the principles disclosed herein can be employed and are intended to include all such aspects and their equivalents. Other advantages and novel features will become apparent from the following detailed description when considered in conjunction with the drawings.

Description

BRIEF DESCRIPTION OF THE DRAWINGS
[0015] The description refers to provided drawings in which similar reference characters refer to similar parts throughout the different views, and in which:
[0016] FIG. **1** illustrates a perspective view of one potential embodiment of a batting practice device of the present invention in accordance with the disclosed architecture;
[0017] FIG. **2** illustrates a perspective view of a tee of one potential embodiment of a batting practice device of the present invention in accordance with the disclosed architecture; and
[0018] FIG. **3** illustrates a flowchart of a method of using one potential embodiment of a batting practice device of the present invention in accordance with the disclosed architecture.
DETAILED DESCRIPTION
[0019] The innovation is now described with reference to the drawings, wherein like reference numerals are used to refer to like elements throughout. In the following description, for purposes of explanation, numerous specific details are set forth to provide a thorough understanding thereof. It may be evident, however, that the innovation can be practiced without these specific details. In other instances, well-known structures and devices are shown in block diagram form to facilitate a description thereof. Various embodiments are discussed hereinafter. It should be noted that the figures are described only to facilitate the description of the embodiments. They are not intended as an exhaustive description of the invention and do not limit the scope of the invention. Additionally, an illustrated embodiment need not have all the aspects or advantages shown. Thus, in other embodiments, any of the features described herein from different embodiments may be combined.
[0020] As noted above, there exists a long-felt need in the art for a batting practice device that allows players to practice and refine specific launch angles. There also exists a long-felt need in the art for a batting practice device that provides real-time feedback on key performance metrics, such as ball speed, trajectory, and launch angle. Moreover, there exists a long-felt need in the art for a batting practice device that is durable, portable, and adjustable to accommodate diverse training scenarios and environments.
[0021] The present invention, in one exemplary embodiment, is comprised of a batting practice device designed to aid athletes in training for sports such as baseball and softball by enabling the practice of specific hitting launch angles. The device comprises a weather-resistant hollow base, which can be filled with water or sand for stability and features a removable threaded cap with a rubber gasket to ensure a watertight seal.
[0022] A primary support pole is attached to the base and may be reinforced with secondary support members for added stability. A target member is connected to the pole, wherein a locking member secures the target at specific heights.
[0023] An adjustable tee with a telescoping body allows height, lateral, and angular adjustments to accommodate various hitting scenarios. Features include a locking mechanism, height markings, a sliding track for lateral movement, and a tilting mechanism for angular positioning, simulating a variety of pitch types and entry angles.
[0024] The device may also include sensors to measure metrics such as ball speed, launch angle,

and distance, with data displayed on an electronic interface or mobile application. An optional camera integrated with AI tracking software captures swing mechanics, providing detailed feedback, slow-motion replays, and comparisons with preloaded videos to improve training.
[0025] A method for using the device involves filling the base for stability, adjusting the target member's angle, setting the tee's height and position, and utilizing sensors and cameras for real-time performance feedback.
[0026] The batting practice device provides a versatile training solution for baseball and softball players, enabling the practice of specific launch angles while delivering real-time feedback on performance metrics such as ball speed and trajectory. Its adjustable tee and advanced features, including a camera and AI-assisted tracking software, enhance versatility and effectiveness, supporting players in refining their hitting techniques.
[0027] Referring initially to the drawings, FIG. **1** illustrates a perspective view of one potential embodiment of a batting practice device **100** of the present invention in accordance with the disclosed architecture. The present batting practice device **100** is designed to assist athletes in sports such as baseball, softball, soccer, volleyball, or any other ball-striking sport by enabling precise control of launch angles during training. The device **100** is comprised of a base **101** that is preferably hollow and is made from a weather-resistant plastic or polymer, which is resistant to cracking, UV degradation, and other environmental stressors. The hollow base **101** is designed to be filled with a dense material, such as water or sand, to achieve the necessary weight for free-standing stability. A removable, threaded cap **102** with a rubber gasket **104** is incorporated into the base **101** to facilitate the filling and emptying process, ensuring a watertight seal that prevents leaks during use. To enhance portability, the base **101** includes built-in wheels **106**, such as but not limited to recessed wheels, which remain off the ground during operation to maintain stability and only engage when the device **100** is tilted, allowing users to easily transport the device **100** between training locations. The wheels **106** are comprised of high-durability rubber or polyurethane, enabling smooth rolling on various surfaces, including grass, gym floors, or concrete. To improve traction during transport, the wheels **106** may be textured wheels or grooved wheels to prevent slippage when moving the device **100** across uneven or slick surfaces.
[0028] At least one primary support pole **108** is attached to the base **101**, as seen in FIG. **1**. The support pole **108** may be supported by secondary support members **110**, which attach to both the pole **108** and the base **101**. These secondary support members **110** provide additional structural reinforcement, preventing unintended tilting or swaying of the support pole **108** during high-impact training sessions. At least one target member **112** attaches to the support pole **108**, wherein the target member **112** is designed to catch or redirect balls hit into/at the device **100** while allowing players to train for specific launch angles.
[0029] More specifically, the target member **112** is attached to the primary support pole **108**. The pole **108** is telescopic such that the target member **112** can be locked into place at the desired height using a locking member **116**, such as but not limited to a rotating collar lock, a spring-pin, etc. The locking member **116** ensures that the target member **112** remains securely positioned, even under the repeated impact of high-velocity balls. During use, the height of the target member **112** relative to the tee **126** allows users to simulate the proper launch angle of ground balls, line drives, or fly balls, ensuring said angle is achieved, as indicated by a hit ball making contact with (and being captured by) the target member **112**, wherein the member **112** is preferably a net **120**. The net **120** is reinforced with double-stitched or quadruple-stitched seams **122** to withstand high-velocity impacts over extended use. The edges of the netting may be comprised of at least one frame member **124** with high-durability piping or flexible rods to maintain the net's **120** structural integrity and prevent sagging. The height of the pole **108** may allow angles such as but not limited to **10-40** degrees to be formed from the tee **126** to the member **112**.
[0030] The device **100** may also be comprised of an adjustable tee **126**, as seen in FIG. **2**, that enables players to practice a variety of hitting scenarios by allowing precise adjustments to the ball

placement. The tee **126** may feature a telescoping body **128** with a base **130** and a ball-holding member **132** that a baseball or softball can rest atop of or can be secured within such as but not limited to rubberized cups, spring-loaded supports, or adjustable clamps that securely hold the ball without damaging its surface. The body **128** height is adjusted by loosening a locking mechanism **134**, such as but not limited to a locking collar, friction clamp, or threaded fastener. The body **128** may be comprised of height markings **136** to provide preset levels for quick and accurate adjustments. The height markings **136** may be engraved, printed, or embossed for long-term visibility. The baseball tee **126** also includes a lateral adjustment mechanism **138** that allows the ball holder **132** to simulate inside or outside pitches. The mechanism **138** is preferably a sliding track or swivel joint that connects the body **128** to the base **130**. The mechanism **138** enables the ball holder **132** to move laterally, while a locking mechanism **140** on the mechanism **138**, such as a ratchet or friction-based mechanism, secures the holder **132** in the desired position. In some configurations, the tee **126** further incorporates a tilting mechanism **142**, such as but not limited to a ball-and-socket joint or pivoting hinge at the base **130** to allow angular adjustments. As a result, the tee **126** enables players to practice hitting balls at different entry angles, such as high fastballs or low-breaking pitches. The combination of height, lateral, and angular adjustment mechanisms ensures that the adjustable baseball tee **126** can simulate a wide range of pitch scenarios, making it suitable for players of all skill levels.

[0031] The device **100** also incorporates advanced features to provide players with real-time feedback and performance analysis. At least one sensor **144** embedded within or attached to the target member **112** measures key metrics, such as but not limited to ball speed, launch angle, and distance. The data collected by the sensors **144** is displayed on an electronic interface **146**, such as a built-in LCD screen or a connected mobile application. This feedback includes swing velocity, exit velocity, and detailed trajectory graphs, enabling players to monitor their performance in real time. The sensors **144** and interface **146** may be powered by a rechargeable battery pack **148** comprised of a charging port **150**. The rechargeable battery pack **148** may feature LED indicators to display the current charge level and provide alerts when recharging is required. The device **100** may also be comprised of a camera **152** mounted at optimal angles to record swing mechanics and ball trajectories. The cameras **152** are integrated with AI-assisted tracking software **154**, which analyzes swing patterns and provides detailed feedback to the user via the interface **146**. The interface **146** also supports features such as slow-motion camera **152** replays and side-by-side comparisons with preloaded swing videos, enabling players to identify areas for improvement and develop proper techniques. The AI-assisted tracking software **154** may further highlight key aspects of the player's swing, such as timing, bat path, and point of contact, and provide recommendations for improvement based on the collected data.

[0032] The present invention is also comprised of a method of using **200** the device **100**, as seen in FIG. **3**. First, a device **100** is provided, which is comprised of a base **101**, at least one primary support pole **108**, at least one target member **112**, and at least one adjustable tee **126** [Step **202**]. Next, the base **101** is filled with a dense material, such as water or sand to provide sufficient weight for free-standing stability [Step **204**]. Then, the height angle of the target member **112** is configured using the locking member **116** [Step **206**]. Next, the height, lateral position, and angular orientation of the adjustable tee **126** are configured to suit the player's training needs [Step **208**]. More specifically, the height of the telescoping body **128** is adjusted using the locking mechanism **134**, and height markings **136** may be used to select preset levels. The lateral adjustment mechanism **138** and tilting mechanism **142** are used to simulate inside or outside pitches and varied entry angles, respectively. The ball-holding member **132** is then loaded with a ball. Next, players hit balls using the adjustable tee **126** or directly at the target member **112**. The target member **112**, depending on the chosen configuration, either deflects balls at realistic trajectories or catches them using the surrounding net **120** [Step **210**]. During use, sensors **144** embedded in the target member **112** measure key metrics such as ball speed, launch angle, and distance. These metrics are displayed on

the electronic interface **146**, enabling real-time performance monitoring. Players can review this feedback to refine their hitting techniques [Step **212**]. Optionally, the camera **152** records the player's swing mechanics and ball trajectories. The recordings are analyzed by the AI-assisted tracking software **154**, which provides detailed feedback and tailored recommendations through the interface **146**. Users can then access slow-motion replays and side-by-side comparisons with preloaded swing videos for further improvement [Step **214**].

[0033] Certain terms are used throughout the following description and claims to refer to particular features or components. As one skilled in the art will appreciate, different persons may refer to the same feature or component by different names. This document does not intend to distinguish between components or features that differ in name but not structure or function. As used herein "batting practice device" and "device" are interchangeable and refer to the batting practice device **100** of the present invention.

[0034] Notwithstanding the forgoing, the batting practice device **100** of the present invention and its various components can be of any suitable size and configuration as is known in the art without affecting the overall concept of the invention, provided that they accomplish the above-stated objectives. One of ordinary skill in the art will appreciate that the size, configuration, and material of the batting practice device **100** as shown in the FIGS. are for illustrative purposes only, and that many other sizes and shapes of the batting practice device **100** are well within the scope of the present disclosure. Although the dimensions of the batting practice device **100** are important design parameters for user convenience, the batting practice device **100** may be of any size, shape, and/or configuration that ensures optimal performance during use and/or that suits the user's needs and/or preferences.

[0035] Various modifications and additions can be made to the exemplary embodiments discussed without departing from the scope of the present invention. While the embodiments described above refer to particular features, the scope of this invention also includes embodiments having different combinations of features and embodiments that do not include all the described features. Accordingly, the scope of the present invention is intended to embrace all such alternatives, modifications, and variations as fall within the scope of the claims, together with all equivalents thereof.

[0036] What has been described above includes examples of the claimed subject matter. It is, of course, not possible to describe every conceivable combination of components or methodologies for purposes of describing the claimed subject matter, but one of ordinary skill in the art may recognize that many further combinations and permutations of the claimed subject matter are possible. Accordingly, the claimed subject matter is intended to embrace all such alterations, modifications, and variations that fall within the spirit and scope of the appended claims. Furthermore, to the extent that the term "includes" is used in either the detailed description or the claims, such term is intended to be inclusive in a manner similar to the term "comprising" as "comprising" is interpreted when employed as a transitional word in a claim.

Claims

1. A batting practice device comprising: a base comprised of a wheel; a primary support pole attached to the base; a target member attached to the primary support pole; and an adjustable tee comprising a body, a ball-holding member attached to the body, and a lateral adjustment mechanism for adjusting a lateral position of the ball-holding member.

2. The batting practice device of claim 1, wherein the wheel is comprised of a recessed wheel.

3. The batting practice device of claim 1, wherein the locking mechanism is comprised of a quick-release lever.

4. The batting practice device of claim 1, wherein the base is hollow.

5. The batting practice device of claim 4, wherein the base is comprised of cap.

6. The batting practice device of claim 5, wherein the base is comprised of a gasket.
7. The batting practice device of claim 1, wherein the primary support pole is telescopic.
8. The batting practice device of claim 1 further comprised of a secondary support member that attaches to the base and to the primary support pole.
9. A batting practice device comprising: a base comprised of a wheel; a primary support pole attached to the base; a camera; a sensor; an electronic display; a target member attached to the primary support pole; and an adjustable tee comprising a body, a ball-holding member attached to the body, and a lateral adjustment mechanism for adjusting a lateral position of the ball-holding member.
10. The batting practice device of claim 9, wherein the primary support pole is telescopic.
11. The batting practice device of claim 10, wherein the primary support pole is comprised of a locking member.
12. The batting practice device of claim 9, wherein the target member is flat.
13. The batting practice device of claim 9, wherein the target member is comprised of a net.
14. The batting practice device of claim 13, wherein the net is comprised of a frame member.
15. The batting practice device of claim 9, wherein the ball-holding member is comprised of a rubberized cup.
16. The batting practice device of claim 9, wherein the body is comprised of a telescopic body.
17. The batting practice device of claim 9, wherein the sensor measures a ball speed, a launch angle, and a distance.
18. The batting practice device of claim 9, wherein the camera is comprised of an AI-assisted tracking software.
19. The batting practice device of claim 13, wherein the net is comprised of a reinforced seam.
20. A method of using a batting practice device, the method comprising the following steps: providing a batting practice device comprised of a base, a primary support pole attached to the base, a target member attached to the primary support pole via a pivoting mechanism, and an adjustable tee comprising a telescoping body and a ball-holding member; adjusting the primary support pole to configure the target member to a desired height and securing the target member in place using a locking member; adjusting a lateral position of the ball-holding member using a lateral adjustment mechanism to simulate an inside or outside pitch; adjusting an angular orientation of the adjustable tee using a tilting mechanism to simulate a desired ball entry angle; and hitting a ball placed on the ball-holding member of the adjustable tee toward at the target member.