ABSTRACT

As described, the present disclosure provides a complete sports training system, including an organization case for storing and transporting the training components. More particularly, the sports training system comprises directional cones, aim-training gates, alphanumeric component cones, and supplemental directional indicators. In some embodiments, the directional cones may comprise a directional indicator and stabilizing mechanism, wherein the directional indicator may instruct a participant or athlete to proceed in the designated direction. In some embodiments, the directional cones and other training components may be set up to develop a training course.
SPORTS TRAINING SYSTEM WITH DIRECTIONAL INDICATOR CONES, AIM-TRAINING GATES, AND SPORT CASE

CROSS REFERENCE TO PRIOR RELATED APPLICATIONS


BACKGROUND OF THE DISCLOSURE

[0002] 1. Field of the Disclosure

[0003] The present disclosure relates to a complete sports training system, including an organization case for storing and transporting the training components. More particularly, the sports training system comprises directional cones, aim-training gates, alphanumeric component cones, and supplemental directional indicators.

[0004] 2. Discussion of the Related Art

[0005] Sports are a global pastime, as participants and spectators, and participants range from highly skilled professional athletes all the way down to preschoolers during recess. Despite this expansive range, the basic training techniques may be similar, and, consequently, the inefficiencies may also be similar.

[0006] Currently, organizing, transporting, and setting up sports equipment consumes and generally wastes a significant amount of time. To adequately prepare for a practice, players or coaches may have to locate and carry the appropriate equipment to a vehicle, which they will then have to unload once at a field or practice area. Collection and transportation of balls, cones, and other equipment may be cumbersome and time consuming. Often, the equipment is scattered, and coaches, players, or parents of players have to search for the separate pieces before throwing them into a vehicle, which they then have to unload and carry to the field.

[0007] Additionally, once the equipment is set up, a coach or trainer must explain the training exercise. Depending on the training needs of the class or team, a coach may have to explain multiple exercises to multiple groups or players. Cones may be used to develop a training course, but currently, cones are simply visual markers that indicate some change in action. As such, there exists a need to develop a more efficient and more complete sports training system.

SUMMARY OF THE DISCLOSURE

[0008] Accordingly, the present disclosure provides a comprehensive sports training system, including a portable sports case, which overcomes the disadvantages of prior art as briefly described above. More particularly, the present disclosure presents directional cones and training cones comprising a plurality of directional cones.

[0009] In some embodiments, a directional cone may comprise a cone configured to be placed on a planar surface as a visual marker, wherein the visual marker indicates a point on a training path; a directional indicator extending from the cone in a position generally parallel to the planar surface, wherein the directional indicator is configured to indicate a path direction; and a stabilizing feature configured to stabilize the directional cone on the planar surface.

[0010] In some aspects, the directional indicator may further indicate a relative speed. In some implementations, the directional indicator may comprise an arrow extending from the cone, wherein the arrow may be static or adjustable. In some embodiments, the directional indicator may be detachable.

[0011] In some embodiments, the directional cone may further comprise an identification tag. The identification tag may be configured to interface with an external device, wherein the identification tag may allow the external device to recognize a location of the directional cone. In some aspects, the identification tag may further allow the external device to recognize the path direction indicated by the directional indicator.

[0012] In some aspects, the directional cone may further comprise an electronic component. In some implementations the electronic component may comprise an illumination device. The illumination device may be configured to project an arrow-shaped illumination projected from the cone.

[0013] In some embodiments, the directional cone may further comprise an identifying marker. The directional cone may comprise a plurality of stability features, wherein each of the plurality of stabilizing features is configured to stabilize the directional cone on distinct types of planar surfaces. In some aspects, the stabilizing feature may be detachable.

[0014] In some implementations, a training system may comprise a plurality of directional cones, wherein an arrangement of the plurality of directional cones may create a training path. In some aspects, each of the directional cones comprise a cone configured to be placed on a planar surface as a visual marker, wherein the visual marker may indicate a point on a training path; a directional indicator extending from the cone in a position generally parallel to the planar surface, wherein the directional indicator may be configured to indicate a path direction; and a stabilizing feature configured to stabilize the directional cone on the planar surface.

[0015] In some aspects, the training path may be configured to improve a user's agility and/or speed. The directional indicators of the plurality of directional cones may be interchangeable. In some embodiments, each of the plurality of directional cones further comprises an identification tag. In some implementations, at least two of the plurality of directional cones may further comprise electronic components, wherein the electronic components may enable intercommunication between the at least two of the plurality of directional cones.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] The foregoing and other features and advantages of the disclosure will be apparent from the following, more particular description of preferred embodiments of the disclosure, as illustrated in the accompanying drawings.

[0017] FIG. 1A illustrates an exemplary embodiment of a collapsible directional cone device.

[0018] FIG. 1B illustrates an exemplary embodiment of a collapsible directional cone device.

[0019] FIG. 1C illustrates an exemplary embodiment of a collapsible directional cone device.

[0020] FIG. 1D illustrates an exemplary directional cone device as fitted with an exemplary cone type.
FIG. 1E illustrates an exemplary directional cone device as fitted with an alternate exemplary cone type.

FIG. 1F illustrates a top down view of an exemplary directional cone device as fitted with an exemplary cone type.

FIG. 2A illustrates an exemplary embodiment of a directional cone.

FIG. 2B illustrates an exemplary embodiment of a directional cone.

FIG. 2C illustrates an alternate exemplary embodiment of a directional cone.

FIG. 2D illustrates an alternate exemplary embodiment of a directional cone.

FIG. 2E illustrates an alternate exemplary embodiment of a directional cone.

FIG. 3A illustrates a top view of an exemplary directional cone.

FIG. 3B illustrates a top view of an exemplary directional cone.

FIG. 3C illustrates a top view of an exemplary directional cone.

FIG. 3D illustrates a top view of an exemplary directional cone.

FIG. 4A illustrates a top view of an alternative exemplary embodiment of directional cone.

FIG. 4B illustrates a top view of an alternative exemplary embodiment of directional cone.

FIG. 4C illustrates a top view of an alternative exemplary embodiment of directional cone.

FIG. 4D illustrates an exemplary embodiment of supplemental directional indicators.

FIG. 5A illustrates an exemplary embodiment of supplemental directional indicators.

FIG. 5B illustrates an exemplary embodiment of supplemental directional indicators.

FIG. 5C illustrates an exemplary embodiment of supplemental directional indicators.

FIG. 5D illustrates an exemplary embodiment of supplemental directional indicators.

FIG. 5E illustrates an exemplary embodiment of supplemental directional indicators.

FIG. 5F illustrates an exemplary embodiment of supplemental directional indicators.

FIG. 6A illustrates an alternate exemplary embodiment of a directional cone.

FIG. 6B illustrates an alternate exemplary embodiment of a directional cone.

FIG. 6C illustrates an alternate exemplary embodiment of a directional cone.

FIG. 7A illustrates a top view of an exemplary embodiment of an alphanumeric component set.

FIG. 7B illustrates a top view of an exemplary embodiment of an alphanumeric component set.

FIG. 8A illustrates a top view of an exemplary embodiment of an expandable alphanumeric component cone, wherein the size of an alphanumeric component cone may be adjustable.

FIG. 8B illustrates a top view of an exemplary embodiment of an expandable alphanumeric component cone, wherein the size of an alphanumeric component cone may be adjustable.

FIG. 9 illustrates an exemplary embodiment of a training course utilizing alphanumeric components.

FIG. 10A illustrates a front view of an exemplary embodiment of aim-training gates.

FIG. 10B illustrates a front view of an exemplary embodiment of aim-training gates.

FIG. 10C illustrates a front view of an exemplary embodiment of aim-training gates.

FIG. 10D illustrates a front view of an exemplary embodiment of aim-training gates.

FIG. 11A illustrates a top view of an exemplary embodiment of an aim-training gate.

FIG. 11B illustrates a top view of an exemplary embodiment of a closed aim-training gate set.

FIG. 11C illustrates a top view of an exemplary embodiment of an open aim-training gate set.

FIG. 12A illustrates a top view of an exemplary embodiment of a single extendable aim-training gate.

FIG. 12B illustrates a top view of an exemplary embodiment of a closed, extendable aim-training gate.

FIG. 12C illustrates a top view of an exemplary embodiment of a closed, extended aim-training gate.

FIG. 12D illustrates a top view of an exemplary embodiment of a single extendable aim-training gate.

FIG. 12E illustrates a top view of an exemplary embodiment of a closed, extendable aim-training gate.

FIG. 12F illustrates a top view of an exemplary embodiment of a closed, extended aim-training gate.

FIG. 14A illustrates a side view of an exemplary embodiment of a catching mechanism that may be attached to an aim-training gate.

FIG. 14B illustrates a side view of an exemplary embodiment of a catching mechanism that may be attached to an aim-training gate.

FIG. 15A illustrates an exemplary embodiment of an aim-training gatepost.

FIG. 15B illustrates an exemplary embodiment of an aim-training gatepost.

FIG. 15C illustrates an exemplary embodiment of an aim-training gatepost.

FIG. 15D illustrates an exemplary embodiment of an aim-training gatepost.

FIG. 16A illustrates a top down view of an exemplary embodiment of an open training-system sport case.

FIG. 16B illustrates a top down view of an exemplary embodiment of a closed training-system sport case.

FIG. 17 illustrates a three-dimensional perspective of an alternate embodiment of a partially opened basic training system sport case, wherein the sport case may comprise a lid portion and a base portion.

FIG. 18 illustrates a side view of an alternate embodiment of a closed training-system sport case, wherein the lid portion may comprise external recesses.

FIG. 19 illustrates an exemplary embodiment of a training course utilizing various embodiments of directional cones, aim-training gates, alphanumeric component cones, and supplemental directional indicators.

**DETAILED DESCRIPTION OF THE DISCLOSURE**

**Glossary**

**Cone:** as used herein, cone refers to a freestanding object that may be used as a visual marker when placed on a surface, including, for example, a sports field or court. A cone may comprise a traditional conical shape, but other shapes should be considered as part of the inventive art, including, for example, a pyramid or cube. Similarly, a cone may refer to a portion of a shape, such as a slice.
Referring now to FIGS. 1A-1C, an exemplary embodiment of a collapsible directional cone device is illustrated. Referring to FIG. 1A, when fully collapsed, the directional cone device may be essentially a stack of planar components, similar to a stack of beverage coasters. As illustrated in a top view in FIG. 1C, the collapsible directional cone device may comprise concentric circles with a rectangular base with a directional indicator 100 extending from said circles. In some examples, such as illustrated in FIGS. 3A-3D, the shapes of the bases may be varied, which may emphasize the directional or speed indication of the directional cone.

In some aspects, the directional indicator 100 may comprise a writeable surface, wherein a user or trainer may add training instructions for reference, such as “squats” or “lunges,” for example. The writeable surface may comprise a chalkboard or a white board, wherein the writing may be manual; a digital display, wherein the writing may be electronically transmitted, such as wirelessly from a handheld device; or a magnetic board, wherein the instructions may be attached to the surface. In some embodiments, a directional cone may further comprise an instruction tab, which may comprise non-directional instructions, such as exercise commands. In some aspects, instruction tabs may be pulled out and/or over the directional indicator, which may indicate to a participant to engage in the exercise command prior to following the directional indicator.

In some exemplary embodiments, the directional cone device may comprise a stabilizing feature 110, which may be collapsible or flattened when not in use or when additional stability may not be necessary, for example. Referring to FIG. 1B, when the directional cone device is expanded, a pocket 115 may be formed that may be capable of securing a marker, such as a flag. In some exemplary embodiments, the top fitting 120 may pivot to fit through the top opening of a cone. Alternatively, not shown, the top fitting 120 may be pliable, wherein a user may pinch or bend the top fitting 120 and pull it through the top opening of a cone.

In some embodiments, a collapsible directional cone device may fit a range of cone types. For example, referring to FIGS. 1D and 1E, a directional cone device is illustrated as fitted with two different cone types. As shown in FIG. 1D, the cone 150 may comprise a short, relatively flat, sports cone. Alternatively, as shown in FIG. 1E, the cone 160 may comprise a more traditional cone, including, for example, a safety cone. In some examples, the top fitting 120 may be the same size or larger than the top opening of the cone, wherein the top fitting 120 may rest on over the top opening of the cone or wherein the top fitting 120 securely fits within the top opening. Similarly, the bottom fitting 125 may be the same size or larger than the bottom opening of the cone. In such embodiments, the bottom fitting 125 and the directional indicator 100 may lay parallel to the ground.

In some exemplary embodiments, the top opening 120 may comprise a pocket 115, which may securely hold an identifying marker 130, including, for example, a numbered flag or a color button. In some examples, the identifying marker 130 may allow a coach to assign course paths to separate individuals, such as by athletic capability or training needs. In other examples, such as described in FIG. 5I, a numbered identifying marker 130 may indicate how many times a participant should complete an action, such as shooting at an aim-training gate or running the entire course. In some aspects, the directional indicator may further comprise an illumination device, and the identifying marker 130 may comprise a light, which may be distinguished by color and/or blinking patterns, for example.

In some embodiments, the directional cone device may further comprise an electronic component, which may enable one or more functionalities. In some implementations, the electronic component may allow for a digital directional indication. For example, a digital directional indication may project an illuminated arrow from the cone. As another example, a digital directional indication may illuminate the body of the cone with a directional indication, similar to digital alarm clock numbers.

In some aspects, the directional cone may further comprise a motion sensor, wherein the electronic component may allow the directional cone to recognize when a participant has passed the directional cone. In some embodiments, wherein the directional cone comprises an illuminating feature, the motion sensor may be logically linked to the illuminating feature and change the illumination once the predefined motion is sensed.

In some embodiments, the directional cone may further comprise an identification tag, such as a Bluetooth or radio frequency identification tag, wherein a smartphone or other device may recognize when a user has successfully passed a directional cone. In some aspects, the device may track the speed of the user through the course. An identification tag may also allow the user to confirm that the course is set up properly or may allow the device to track the progress of the user’s speed, agility, and endurance. In some aspects, the training system may allow a user to run through a training course wearing or holding a mobile device, such as a smartphone. The training system may utilize an accelerometer, such as may be built into the device, to detect motion and movement through the training course.

Referring now to FIGS. 2A and 2B, an exemplary embodiment of a directional cone 250 is illustrated in two settings. In some exemplary embodiments, a directional cone 250 may comprise a directional indicator 200 and a stabilizing feature 220. The directional indicator 200 may be static, such as illustrated in FIGS. 3A-3D, or may be adjustable, such as illustrated in FIGS. 4A-4C. In some exemplary embodiments, one or both of the directional indicator 200 and the stabilizing feature 220 may be folded to lay flat against the directional cone 250 when the directional cone 250 may be stored or when direction may not be necessary. Such embodiments may allow multiple directional cones to be compactly stacked.

In some examples, the directional indicator 200 may be independent from the stabilizing feature 220. Whereas in other examples, not shown, the directional indicator may further comprise a stabilizing feature, similar to the stabilizing feature 220 shown. The stabilizing feature 220 may comprise a protrusion capable of securing the position of the directional cone 250. In some exemplary embodiments, the stabilizing feature 220 may be pressed into the soil, such as on a sports field. Alternatively, the stabilizing feature 220 may be weighted to limit movement where the ground may not be easily penetrated, such as in a gym or a tennis court. As another example, the stabilizing feature 220 may comprise a suction cup, which may adhere to some surfaces, such as laminate, tile, or sealed wood (such as found in a gym). Other stabilizing methods may be practical and are well within the inventive art described herein.
Referring now to FIGS. 2C-2E, an alternate exemplary embodiment of a directional cone 260 is illustrated in three settings. In some exemplary embodiments, similar to the example illustrated in FIGS. 2A and 2B, the directional cone 260 may comprise a directional indicator 210 and a stabilizing feature 230. In contrast to FIG. 2A, the directional indicator 210 and the stabilizing feature 230 may foldable, allowing for a longer directional indicator 210. In some such embodiments, the stabilizing feature 260 may be retractable, wherein an extension of the stabilizing feature 230 into the ground may limit the movement of the directional cone 260.

As illustrated in FIG. 2C, the foldable directional indicator 210 may be collapsible, wherein when fully collapsed, the directional indicator 210 may lay flat or flush against the surface of the directional cone 260. In some exemplary embodiments, the directional indicator 210 may further comprise a securing feature 235, which may secure the collapsed position of directional indicator 210. As illustrated in FIG. 2D, the directional indicator 210 may be unfolded at living hinges, wherein the directional indicator 210 may comprise the same material throughout. Alternatively, not shown, the segments of the directional indicator 210 may be connected by a separate hinging mechanism.

Referring now to FIG. 2E, an exemplary embodiment of a directional cone 260 with a fully extended directional indicator 210 is illustrated. In some examples, the securing feature 235 may secure the fully extended position of the directional indicator 210, for example, by pinning the tip of the directional indicator 210 into the ground. In some exemplary embodiments, as illustrated in FIG. 2E, the directional cone 260 may be fixed over other cones 270 without directional indicators. In some such examples, the directional cone 260 may comprise a semirigid or expandable material, such as neoprene or rubber. In still further examples, the directional cone 260 may be reversible, wherein the directional cone 260 may be flipped inside out. Such embodiments may allow for two colors, for example, red and green, which may alternatively indicate the beginning or end of a training course. Such embodiments may enable the directional indicator 210 to point in two directions.

Referring now to FIGS. 3A-3D, top views of exemplary directional cones 300, 315, 330, 345 are illustrated, wherein the directional indicators 310, 325, 340, 355 and the bases 305, 320, 335, 350 are varied but fixed in each of the figures. In some exemplary embodiments, such as illustrated in FIG. 3A, the directional indicator 310 may direct a runner, athlete, or sport participant to move straight when passing the directional cone 300. In such examples, a square or rectangular cone base 305 combined with straight indicator 310 may prompt an athlete to make a sharp turn around the right angles of the rectangular base 305. Accordingly, exemplary embodiments with a rectangular base 305 and a straight indicator 310 may be multipurpose.

In other exemplary embodiments, as illustrated in FIG. 3B, the directional indicator 325 may direct the participant to move right when passing the directional cone 315. In some examples, a circular base 320 in combination with a curved indicator 325 may prompt a more natural or gradual turn than the embodiment illustrated in FIG. 3A, for example.

As another example, as illustrated in FIG. 3C, the directional indicator 340 may direct the participant to move around the cone 330 and switch directions, essentially making a u-turn. An elliptical base 335 may clarify the turning point in the u-turn and may be more effective than a circular base 320, such as illustrated in FIG. 3B, which may be confused with a left or right turn, even when combined with a u-turn indicator 340.

In another example, as shown in FIG. 3D, the directional indicator 355 may indicate direction and relative speed. Multiple straight arrows in the directional indicator 355 may prompt the participant to sprint or run faster past the directional cone 345, whereas a single straight arrow 310 may prompt the participant to maintain a speed or slow down. Direction cones 345 that may indicate a change in speed may comprise a triangular base 350. For example, as illustrated, the triangular base 350 may point in the same direction as the direction indicator 355, which may emphasize an increase in speed. In contrast, the triangular base 350 may point in the opposite direction of the direction indicator 355 to emphasize a decrease in speed, such as illustrated in FIG. 19.

Referring now to FIGS. 4A-4C, top views of an alternative exemplary embodiment of directional cones 400 are illustrated, wherein the directional indicator 410 may be adjustable. In some exemplary embodiments, the directional indicator 410 may comprise a pivot point 415, which may allow a coach, trainer, or gym teacher to change the route without having to replace the directional cone 400. For example, as shown in FIG. 4A, the directional indicator 410 may guide the athlete to run straight when passing the directional cone 400. Utilizing the same or similar directional cone 400, a coach may change the route by adjusting the directional indicator 410 at its pivot point 415. For example, as shown in FIG. 4B, the directional indicator may point right, similar to the embodiment illustrated in FIG. 3B. In some exemplary embodiments, the directional indicator 410 may be extended to allow for clearer route guidance. In some exemplary embodiments, the pivot point 415 may allow the directional indicator 410 to rotate in any of the 360° around said pivot point 415. For example, as shown in FIG. 4C, the directional indicator 410 may guide the athlete to run back around the directional cone 400, similar to the u-turn directional indicator 330 shown in FIG. 3C.

Referring now to FIGS. 5A-5F, exemplary embodiments of supplemental directional indicators 500, 520, 530 are illustrated. In some exemplary embodiments, non-cone directional guidance may be helpful to clarify the course between cones. Such an embodiment may allow a coach or trainer to expand the route area without requiring extensive explanation.

In some examples, such as illustrated in FIG. 5A in top view and FIG. 5B in side view, a supplemental indicator 500 may comprise a straight line with one terminal arrow, which may prompt a runner to continue in a specific direction. The supplemental indicator 500 may further comprise one or more stabilizers 505, including, for example, a removable stake through a hole in the supplemental indicator 500 or a retractable stake embedded on the surface of the supplemental indicator 500. In some examples, such as illustrated in FIG. 5C in top view and FIG. 5D in side view, multiple supplemental indicators 500 may be layered in a staggered formation, wherein the combination may prompt an increase in speed. In such embodiments, the stabilizers 505 may be overflapped to secure the stacked and staggered formation.

In some exemplary embodiments, such as illustrated in FIG. 5E, the supplemental indicator 520 may comprise a curved arrow with a stabilizer 525. As another example, the supplemental indicator 530 may comprise a straight line with an arrow on both terminals, such as illustrated in FIG. 5F.
Such an embodiment may prompt a participant to choose between paths or it may prompt a participant to run back and forth, wherein the prompt may depend on the construction of the course. In some such embodiments, a number indicator, such as described and illustrated in FIG. 1, may be placed as the stabilizer S35, for example. The number indicator may direct a participant to run back and forth for a specified number of times.

[0099] Referring now to FIGS. 6A-6C, an alternate exemplary embodiment of a directional cone 600 is illustrated, wherein a directional cone 600 may comprise detachable directional components 610, 620. As shown in FIG. 6A, the directional components 610, 620 may be included, held, or contained on or within of the directional cone 600. For example, the directional components 610, 620 may adhere to the surface of the directional cone 600 utilizing magnets, Velcro, or static cling. Alternatively, the directional cone 600 may comprise fitted recesses or pockets configured to hold the directional components 610, 620. In some embodiments, the directional cone 600 may comprise multiple extenders 620, which may allow for a broader range of directional indication lengths and directions.

[0099] In some examples, the directional components may comprise a direction arrow 610 and an extender 620. The directional cone 600 may further comprise attaching features 630, wherein one or both the direction arrow 610 or extender 620 may be connected to the directional cone 600 by the attaching feature 630. In some embodiments, the direction arrow 610 and the extender 620 may further comprise a complementary attaching feature 640, and the attaching feature 640 may further comprise one or both attaching feature 630 or complementary attaching features 640, such as, at opposite ends. As a few illustrative examples, the attaching feature 630 and the complementary attaching feature 640 may comprise a button and slit, Velcro strips, snaps, or a hook and eyelet. When directional indication may not be necessary with the directional cone 600, the direction arrow 610 and the extender 620 may be used as a supplemental direction indicator, such as illustrated and described with FIGS. 5A-5F.

[0097] Referring now to FIG. 6B, an exemplary embodiment of a directional cone 600 is illustrated with a non-extended directional indication. In small spaces or short courses, it may be practical to limit the size of the directional indication. For example, a course set up for small children may provide a very short distance between cones, which may make an extended directional indication unnecessary or confusing. In some examples, the direction arrow 610 may be independently extended from the directional cone 600 without requiring the use of the extender 620, which may remain on the directional cone 600. The complementary attaching feature 640 on the direction arrow 610 may be secured to the attaching feature 630 on the directional cone 600. In some embodiments, the extender 620 may be used as an action stop marker in a training course, such as illustrated in FIG. 19.

[0098] Referring now to FIG. 6C, an exemplary embodiment of a directional cone 600 is illustrated with a fully extended directional indication. In some situations, the direction arrow 610 alone may not be sufficient to clearly indicate a direction. For example, the direction arrow 610 may be easily obscured in a grassy field or may be too small to be visible in a larger training course. In some exemplary embodiments, the complementary attaching feature 640 of the extender 620 may be connected to the attaching feature 630 on the directional cone 600, and the complementary attaching feature 640 on the direction arrow 610 may be connected to the attaching feature 630 on the extender 620.

[0099] In some examples, the attaching features 630 and the complementary attaching features 640 may allow one or both the direction arrow 610 or extender 620 to pivot, which may allow for a broad range of directional indication, without requiring multiple direction arrows 610 or extenders 620. In other embodiments, the extenders 620 may be varied, such as, a straight line, a curved line, or a U-shaped line. Still further examples may include multiple direction arrows 610 that may allow for different directional indications.

[0100] Referring now to FIGS. 7A and 7B, an exemplary embodiment of an alphanumeric component set is illustrated in top view. In exemplary embodiments, an alphanumeric component set may comprise a linear cone 700 and an arc cone 750, wherein a combination of one or both cone types may form numerals zero through nine and letters A through Z, such as illustrated in FIG. 8. In some embodiments, the size of the linear cone 700 and the arc cone 750 may be fixed.

[0101] Referring now to FIGS. 8A and 8B, an exemplary embodiment of an expandable alphanumeric component cone 800 is illustrated in top view, wherein the size of an alphanumeric component cone 800 may be adjustable. In some examples, the alphanumeric component cone 800 may comprise an extending mechanism 810, such as a concertina hinge, for example, for at least a portion of the body. Such embodiments may allow for a range of lengths, dependent on the compact and extended lengths of the hinge. In some embodiments, the location of the extending mechanism 810 may further allow a shape adjustment, such as from a linear cone to an arc cone.

[0102] Referring now to FIG. 9, an exemplary embodiment of a training course utilizing alphanumeric components 900, 950 is illustrated. For example, the letter “B” may be formed with two linear cones 900 and two arc cones 950, and the number “2” may be formed with two linear cones 900 and a single arc cone 950. In some embodiments, a coach may combine multiple letters and numbers into a single course, such as illustrated in FIG. 19. Alternatively, a coach may direct some players to engage the letter “B” and others to engage the number “2” depending on athletic ability or training needs, for example.

[0103] Referring now to FIGS. 10A-10D, exemplary embodiments of aim-training gates are illustrated in front view. An aim-training gate may comprise two gateposts 1010, 1015, two gate portions 1000, 1005, and securing features 1020, 1025, 1030, 1035, 1050, 1060. In some exemplary embodiments, the aim-training gate may be assembled, such as shown in FIG. 10A. For example, the gate portion 1000, 1005 may comprise a post sleeve, wherein the gate portion 1000, 1005 may be attached to the gatepost 1010, 1015 by slipping a post sleeve over the gatepost 1010, 1015. Such examples may allow for easy storage of the aim-training gate, for example, within a sporting case, such as illustrated in FIG. 16.

[0104] In some exemplary embodiments, such as illustrated in FIG. 10A, the aim-training gates may be placed on the ground. For example, the stabilizing features 1020, 1025 may be inserted into a penetrable surface, such as a sports field. In some other exemplary embodiments, such as illustrated in FIG. 10B, the stabilizing features 1030, 1035 of the aim-training gate may be suspended from a bar parallel to the ground, such as the top of a goal frame 1040, such as used in soccer or hockey, or a goal post, such as used in football.
In still further embodiments, such as illustrated in FIGS. 10C and 10D, the stabilizing features 1050, 1060 of the aim-training gate may be attached or connected to a bar perpendicular to the ground, such as the sides of a goal frame 1040. As illustrated in FIG. 10C, a single gate portion 1010 and gatepost 1010 may be attached to a goal frame 1040 by a pair of stabilizing features 1050 that may wrap around a bar on the goal frame 1040. In alternate examples, such as illustrated in FIG. 10D, a gate portion 1010 and gatepost 1015 may be offset away from the goal frame 1040. In such examples, the stabilizing feature 1060 may comprise a frame that may set the gate swing point away from the goal frame 1040. Such exemplary embodiments may provide a narrower target than a free-swinging embodiment, such as illustrated in FIG. 10C.

The specific placement of the aim-training gate may depend on the sport and the training activity. For example, placing the aim-training gate on the ground may allow develop passing accuracy in sports where the ball may be controlled on the ground, such as soccer or field hockey. Connecting the aim-training gate to a goal frame may develop scoring precision. For example, a coach may attach an aim-training gate to a goal frame in a location that may be difficult for a goalie to block.

Referring to FIG. 10C, an exemplary embodiment of an aim-training gate attached to a side portion of a goal is illustrated, wherein the post of the aim-training gate may be offset from the goal. In some examples, the gate portion may swing freely, and any contact with a ball may trigger the gate to move. In contrast, as shown in FIG. 10D, in an alternate exemplary embodiment, the aim-training gate may comprise a frame, wherein the hinging portion of the aim-training gate may be away from the goal. Such examples may limit the target portion to the frame size, which may require more precision than a free-swinging gate.

Referring now to FIG. 11A, an exemplary embodiment of an aim-training gate is illustrated in top view. In some examples, an aim-training gate may comprise a post sleeve 1100, a hinging mechanism 1110, a gate portion 1120, and a fitting 1130. The post sleeve 1100 may fit over a gatepost, including, for example, as illustrated in FIG. 15A. In some alternative examples, not shown, the post sleeve 1100 may also comprise the gatepost, wherein a separate gatepost may not be necessary to place the aim-training gate on the ground or on a goal frame.

Referring to FIG. 11B, an exemplary embodiment of a closed aim-training gate set is illustrated in top view. A complementary aim-training gate may comprise similar components, including, for example, a post sleeve 1170, a hinging mechanism 1160, a gate portion 1150, and a fitting 1140. The fitting tip 1140 of one gate portion 1150 may comprise a shape complementary to the fitting tip 1130 of the other gate portion 1120. Such embodiments may ensure a user, such as a coach or trainer, properly aligns the two gate portions 1150, 1120 when setting up the aim-training gate set.

Referring to FIG. 11C, an exemplary embodiment of an open aim-training gate set is illustrated in top view. In some embodiments, the hinging mechanism 1110 may include a springing mechanism, which may allow the gate portion 1120 to return to the closed position, such as illustrated in FIG. 11B, after a ball is hit at or through the aim-training gate. Some embodiments of the hinging mechanisms 1110, 1160 may restrict the direction of the gate portions 1120, 1150, wherein complementary hinging mechanisms 1110, 1160 may be necessary for the aim-training gate set to function properly. In other examples, the hinging mechanisms 1110, 1160 may allow the gate portions 1120, 1150 to swing in both directions. Such embodiments may allow bi-directional shooting, which may allow players to practice their aim from either side of the aim-training gate. Such examples may also allow a user to acquire and utilize multiple aim-training gates without having to discern between the hinging mechanisms 1110, 1170.

Referring now to FIG. 12A, an exemplary embodiment of a single extendable aim-training gate is illustrated in top view. In some such examples, the extendable aim-training gate may comprise a post sleeve 1200, a gate portion 1210, and a telescoping extension 1220. In some exemplary embodiments, a separate hinging mechanism, such as illustrated in FIGS. 11A-11C, may not be necessary. For example, the post sleeve 1200 and the gate portion 1210 may comprise a flexible material, which may create a living hinge between the gate portion 1210 and the post sleeve 1200. In some exemplary embodiments, the material may allow the gate portion 1210 to return to the closed position, such as illustrated in FIG. 12B.

Referring to FIG. 12B, an exemplary embodiment of a closed, extendable aim-training gate is illustrated in top view. In contrast to the illustrative example in FIG. 11B, the aim-training gate set shown in FIG. 12B may not require two complementary aim-training gates. A second aim-training gate may comprise the same or similar features, including, for example, a post sleeve 1250, a gate portion 1240, and a telescoping extension 1230. In some examples, the gate portions 1210, 1240 may further comprise a capping mechanism that may secure the extensions 1220, 1230 within the gate portions 1210, 1240.

Referring to FIG. 12C, an exemplary embodiment of a closed, extended aim-training gate is illustrated in top view. In some examples, the telescoping extensions 1220, 1230 may be pulled out of the gate portions 1210, 1240, wherein the widest end of the telescoping extensions 1220, 1230 may be wider than the opening on the gate portions 1210, 1240. Such exemplary designs may allow the telescoping extensions 1220, 1230 to be secure and stable without requiring supplemental hardware. In some examples, other features may be useful to add further stability to the extension, such as a locking mechanism.

An aim-training gate with multiple gate sizes may allow a user to tailor the target. For example, for an advanced athlete or in closer ranges, a non-extendable, smaller gate may be more effective than the extended target, which may be more appropriate for long distances or less-skilled athletes. Extendable exemplary embodiments of aim-training gates may provide users with flexibility. For example, a coach may use the same aim-training sets for a range of athletes and functions. A coach may set up a training course, such as illustrated in FIG. 19, for example, where the participant may be prompted to kick a ball at the aim-training gates. Extensions may allow a coach to position the aim-training gates at different distances to improve a participant’s ability to adjust their aim over multiple distances. A coach may also position aim-training gates adjacent to another, at different extended widths, wherein the participants may be prompted to aim at the more appropriate target, for example, based on ability, age, or position. As a simple example, children under the age of ten may aim at the larger target, and children over the age of ten may aim at the smaller target.
Referring now to FIG. 13A, an alternate exemplary embodiment of a single extendable aim-training gate is illustrated in top view. In some examples, the extendable aim-training gate may comprise a post sleeve 1300, a sliding mechanism 1310, a gate portion 1320, and foldable extension 1340, wherein the foldable extension 1340 may be connected by a hinging mechanism 1330 to the gate portion 1320.

Referring to FIG. 13B, an exemplary embodiment of a closed, extendable aim-training gate is illustrated in top view. In some embodiments, the gate portions 1320, 1370 may “swing” open and close along a sliding mechanism 1310, 1380, wherein the gate portions 1320, 1370 may be configured to slide along the axis of the sliding mechanism 1310, 1370, which may be located on the post sleeve 1300, 1390. Some examples may further comprise a securing mechanism that may secure the extension 1340, 1350 to the gate portions 1320, 1370 when the extension 1340, 1350 may not be necessary or when the aim-training gate may be in storage.

Referring to FIG. 13C, an exemplary embodiment of a closed, extended aim-training gate is illustrated in top view. In some examples, the foldable extensions 1340, 1350 may be unfolded at the hinging mechanism 1330, 1360, wherein the foldable extensions 1340, 1350 may be in line with the attached gate portions 1320, 1370. Some exemplary embodiments may further comprise a locking mechanism, not shown, that may secure the extended position of the foldable extensions 1340, 1350.

Referring now to FIGS. 14A and 14B, an exemplary embodiment of a catching mechanism 1410 that may be attached to an aim-training gate 1400 is illustrated in side view. Referring to FIG. 14A, in some exemplary embodiments, a catching mechanism 1410, such as a net or bag, may be capable of capturing or collecting a ball 1430 that may successfully pass through the aim-training gate 1400. In such examples, a training gate 1400 may comprise an attachment feature 1420, including, for example, hooks, snaps, or magnets, wherein the catching mechanism may be connected to the training gate 1400 utilizing the attachment feature 1420. A catching mechanism 1410 may allow a player to practice kicking or hitting a ball 1430 at the training gate 1420 without having to chase after the ball 1430 after an accurate kick.

For example, as illustrated in FIG. 14B, an accurately placed ball 1430 may push the gate door 1405 allowing the ball 1430 to pass through the training gate 1400. The catching mechanism 1410 may collect the ball 1430, allowing the player to easily retrieve the ball from the catching mechanism 1410. For example, a player may pull the ball 1430 from the training gate 1400, or the player may detach the catching mechanism 1410 from the attachment feature 1420 on the training gate 1400 and remove the ball 1430 from the catching mechanism 1410.

Referring now to FIGS. 15A-15D, an exemplary embodiment of an aim-training gatepost 1500 is illustrated. In some exemplary embodiments, as illustrated in FIG. 10A, an aim-training gate may be placed on the ground or suspended to a goal frame. In such examples, a gatepost 1500 may comprise stabilizing features 1510 and fitting features 1520, which may allow for placement or suspension. Referring to FIG. 15A, in some exemplary embodiments, the stabilizing features 1510 and fitting features 1520 may be stored within the gatepost 1500. In some examples, the stabilizing features 1510 and fitting features 1520 may be accessed through a tab 1515, 1525 (respectively).

Referring to FIG. 15B, in some exemplary embodiments, the stabilizing features 1510 may be extended from the gatepost 1500, for example, by pressing the tab 1515. Referring to FIG. 15C, in some such examples, the stabilizing features 1510 may be retracted into the gatepost 1500, and the fitting features 1520 may be extended, for example, by controlling the tab 1525 or pulling the fitting features 1520. In some examples, the fitting feature 1520 may comprise a securing snap 1521, wherein the fitting feature 1520 may be looped around a pole, such as a goal frame, and secured with the securing snap 1521. An exemplary looping embodiment is illustrated in an alternate view in FIG. 15D.

Referring now to FIG. 16A, an exemplary embodiment of an open training-system sport case is illustrated in top down view. In some embodiments, a lid portion 1602 may be attached to a bottom portion 1603 by a hinging mechanism 1601, wherein the top portion 1602 may pivot at the hinging mechanism 1601 when lifted away from the bottom portion 1603.

In some exemplary embodiments, the lid portion 1602 may comprise a variety pockets or recesses, wherein the pockets may be configured to hold specific components of the sports training system. For example, the lid portion 1602 may include separate pockets specifically sized to organize and hold the components of aim-training gates, such as described in FIGS. 10A-13. The capture mechanisms 1626 may fit in a pouch 1625, the gate portions 1621 may be stacked within a fitted recess 1620, and the gateposts 1616 may be snapped into post holders 1615. Similarly, the directional cones 1611 may be secured in a pocket 1610 with a similar depth and shape to the directional cones 1611. Supplemental directional indicators 1613 may be stored and secured in a file pocket 1612.

In some exemplary embodiments, the lid portion 1602 may further comprise a laundry pouch 1605 configured to store dirty clothing 1606, for example. In some examples, the laundry pouch 1605 may retain moisture and odor, which may limit the impact of stored dirty clothing on the sport case 1600. The laundry pouch 1605 may comprise a washable material that may resist bacteria and mold. In some embodiments, the laundry pouch 1605 may be rigid with a removable liner, which may be washed or discarded. In some examples, such as illustrated in FIG. 16B, the laundry pouch 1605 may be accessible through the lid portion 1602 when the sport case 1600 is closed. Such embodiments may be practical and convenient, allowing a coach, player, or parent to remove stored dirty laundry 1606 without having to open the entire sport case 1600, which may be more cumbersome than the laundry pouch 1605.

In some exemplary embodiments, the bottom portion 1603 may comprise recesses or pockets to secure sports projectiles, including, for example, soccer balls, footballs, baseballs, tennis balls, hockey pucks, and Frisbees. In some examples, interchangeable panels 1630, 1635, 1636, 1640, 1645 may comprise sport-specific recesses, which may allow a user to customize the sport case 1600.

As an illustrative example, the users may be parents with children who play soccer, football, and softball. The parents may prefer to store the sport case 1600 in the trunk of their car so that their children’s sports equipment may be easily accessible and organized. The parents may include two soccer ball panels 1630, 1640, a softball ball panel 1645, and a football panel 1635. When softball season ends or if a child decides not to play softball, the parents may interchange the
softball panel 1645 with a second football panel 1636. Such embodiments may provide flexibility.

[0127] Referring now to FIG. 17, an alternate embodiment of a partially opened basic training system sport case 1700 is illustrated in three-dimensional perspective, wherein the sport case 1700 may comprise a lid portion 1710 and a base portion 1720. In some examples, the base portion 1720 may be deep enough to contain the majority of the directional cones and balls so that complementary recesses may not be necessary on the lid portion 1710. Some exemplary embodiments may comprise a fixed configuration, wherein the recesses and organizational features may not be adjusted by the user. For illustrative purposes, the sport case 1700 comprises three spherical recesses 1720, for example to secure a soccer ball or basketball, and three directional cone recesses 1740, 1745, 1750, wherein the cone recesses 1740, 1745, 1750 may be configured to accept three different base shapes. For example, a training system may comprise directional cones with a triangular base, a rectangular base, and a circular base, and a user may want to keep the bases organized separately within the case. Accordingly, the case 1700 may comprise a triangular recess 1750, a rectangular recess 1745, and a circular recess 1740, wherein the directional cones may be stacked and filed within the recesses 1740, 1745, 1750.

[0128] Referring now to FIG. 18, an alternate embodiment of a closed training-system sport case 1800 is illustrated in side view, wherein the lid portion 1810 may comprise external recesses 1850, 1855. In some embodiments, the sport case 1800 may comprise a lid portion 1810 and a bottom portion 1820. Similar to the embodiment illustrated in FIG. 17, in some examples, the bottom portion 1820 may comprise spherical recesses 1830 configured to hold a ball 1835, such as a soccer ball or basketball, and cone recesses 1840 configured to hold a stack of directional cones 1845. In some exemplary embodiments, the lid portion 1810 may be further configured to hold components of the aim-training gate. For example, the lid portion 1810 may comprise gatepost recesses 1850 and gate recesses 1885, wherein the recesses 1850, 1885 may be accessible from the exterior of the lid portion 1810. In some such examples, the recesses 1850, 1885 may also be accessible from the interior, which may broaden the convenience of accessing the aim-training gate components.

[0129] Referring now to FIG. 19, an exemplary embodiment of a training course utilizing various embodiments of directional cones, aim-training gates, alphanumeric component cones, and supplemental directional indicators is illustrated. In some exemplary embodiments, a coach or trainer may design a complex training course for players or athletes to follow without requiring extensive explanation. The training path 1900 may be self-explanatory based on the directional, speed, and action indicators that may be laid out for the training course. The course shown in FIG. 19 is an illustrative example, but other course variations with different equipment combinations may be practical and are well within the inventive art described herein.

[0130] In some exemplary embodiments, the start point of the course may be marked with an extender 1905, such as illustrated in FIGS. 6A-6C. The supplemental directional indicators 1910 may be layered to prompt a player to sprint to the next indication. A directional cone 1915 with a rectangular base may prompt the player to make a hard right. The player may then follow that training path 1900 until the next directional cone 1920, which may prompt the player to run around the directional cone 1920 in a u-turn around an elliptical base. The next directional cone 1925 with a triangular base may prompt the player to make a sharp turn and sprint to the next prompt.

[0131] The training path 1900 may be interrupted with an action stop 1906, such as marked with an extender, such as described with FIGS. 6A-6C, in line with a training gate 1930, wherein the player may be prompted to kick or throw a ball into the training gate 1930. In some exemplary embodiments, a player may run the training path 1900 while dribbling a ball so that the player may already have a ball to kick into the training gate 1930. In some other examples, a ball or balls may be stationed at the action stops 1906. The player may proceed from the action stop 1906 once successful or after a limited number of attempts, such as limited by the supply of balls at the action stop 1906.

[0132] The player may then proceed to the next directional cone 1935, which may prompt the player to turn right around the directional cone 1935. The training path 1900 may then be interrupted by a second action stop 1907, such as marked with an extender. The player may be prompted to shoot at a second training gate 1931. A supplemental directional indicator 1940 may direct the player to approach the alphanumeric component cones 1946, 1947.

[0133] As an illustrative example, the alphanumeric component cones 1946, 1947 are shown in a “2” arrangement 1945 and a “B” arrangement 1950. The player may run around the “2” arrangement 1945 following the supplemental directional indicator 1941 as general guidance how to maneuver around the “2” arrangement 1945. A u-turn directional cone 1921 with an elliptical base may be placed between the “2” arrangement 1945 and the “B” arrangement 1950, wherein the directional cone 1921 may direct the player how to engage the “B” arrangement 1950.

[0134] In some exemplary embodiments, a supplemental directional indicator 1942 may confirm the direction of the training path 1900 around the “B” arrangement 1950. Layered supplemental directional indicators 1911 may be placed near the straight alphanumeric component cones 1947, wherein the supplemental directional indicators 1911 may prompt the player to sprint the straightaway. A u-turn directional cone 1922 with an elliptical base may be placed where the training path 1900 reaches the end of the “B” arrangement. Another directional cone 1955 with an inverted triangular base may direct the player to slow down before following the next right-turn directional cone 1936, which may then direct the player to a final action stop 1908. At the final action stop 1908, a player may be prompted to kick, throw, or hit a ball at an aim-training gate 1932 placed on a goal frame 1960.

[0135] In other exemplary training courses, multiple players may participate in a singular course, for example, in a relay fashion. As an example, a capture net may not be attached to the training gates, and a second player may resume the training path after a first player has successfully passed a ball through the training gate. Such exemplary embodiments may engage the players as a team, which may add a benefit of teamwork training to the personal skill training.

[0136] In some embodiments, the directional cones may be color coded, wherein each direction may be associated with a unique color or marking. For example, left turns may be blue, right turns may be white, and u turns may be yellow. The training system may present the course according to those colors and further specify that the course requires three blue,
two white, and two yellow directional cones or indicators, where the indicators may be detachable.

[0137] A course set may comprise a collection of courses pertaining to a particular trainer, sport, endurance level, or other similar categorizations. For example, a user may own five directional cones with two yellow indicators, three white indicators, and two blue indicators. Accordingly, the user may prefer course sets that do not require more than he may already own. Alternatively, the user may want to know how many more directional cones he should buy to be able to train on a particular course set.

[0138] In some embodiments, a user may purchase training sets, such as for weight loss or soccer agility. In some aspects, a user may subscribe to a particular group, trainer, or coach, wherein a user may have access to courses input by the group, trainer, or coach. For example, a user may want personal training from a celebrity trainer, so, the user may subscribe to that celebrity trainer’s courses. Alternatively, a child may be part of a local soccer team, and the coach or club may provide weekly courses for the child to practice.

[0139] In some embodiments, two or more of the training components may comprise an electronic component that may allow intercommunication between the training components. For example, the training components at the start and at the end of the course may comprise a motion sensor and timer, wherein initial movement of the start of the course may trigger the timer. Movement past the final training component may stop the timer, which may allow a user or coach to track the speed of the user. Similarly, sensors and communication devices may be included in aim training gates, which may allow a participant or coach to track shots taken and/or shots made, for example. The electronic components and identification tags may interface with an external device, such as a smartphone, tablet, or smartwatch, which may allow the participant or coach to track athletic progress of the participant and effectiveness of the training course.

[0140] Although shown and described in what is believed to be the most practical and preferred embodiments, it may be apparent that departures from specific designs and methods described and shown will suggest themselves to those skilled in the art and may be used without departing from the spirit and scope of the disclosure, including uses beyond sports training, such as physical therapy or traffic direction. The present disclosure is not restricted to the particular constructions described and illustrated, but should be constructed to cohere with all modifications that may fall within the scope of the appended claims.

1. A directional cone comprising:
a cone configured to be placed on a planar surface as a visual marker, wherein the visual marker indicates a point on a training path;
a directional indicator extending from the cone in a position generally parallel to the planar surface, wherein the directional indicator is configured to indicate a path direction; and
a stabilizing feature configured to stabilize the directional cone on the planar surface.
2. The directional cone of claim 1, wherein the directional indicator further indicates a relative speed.
3. The directional cone of claim 1, wherein the directional indicator comprises an arrow extending from the cone.
4. The directional cone of claim 3, wherein the arrow comprises a static direction.
5. The directional cone of claim 3, wherein the arrow comprises an adjustable direction.
6. The directional cone of claim 1, wherein the directional indicator is detachable.
7. The directional cone of claim 1, further comprising an identification tag.
8. The directional cone of claim 7, wherein the identification tag is configured to interface with an external device, wherein the identification tag allows the external device to recognize a location of the directional cone.
9. The directional cone of claim 8, wherein the identification tag further allows the external device to recognize the path direction indicated by the directional indicator.
10. The directional cone of claim 1, further comprising an electronic component.
11. The directional cone of claim 10, wherein the electronic component comprises an illumination device.
12. The directional cone of claim 11, wherein the illumination device is configured to project an arrow-shaped illumination projected from the cone.
13. The directional cone of claim 1, wherein the directional cone further comprises an identifying marker.
14. The directional cone of claim 1, wherein the directional cone comprises a plurality of stability features, wherein each of the plurality of stabilizing features is configured to stabilize the directional cone on distinct types of planar surfaces.
15. The directional cone of claim 1, wherein the stabilizing feature is detachable.
16. A training system comprising:
a plurality of directional cones, wherein an arrangement of the plurality of directional cones create a training path, wherein each of the directional cones comprise:
a cone configured to be placed on a planar surface as a visual marker, wherein the visual marker indicates a point on a training path:
a directional indicator extending from the cone in a position generally parallel to the planar surface, wherein the directional indicator is configured to indicate a path direction; and
a stabilizing feature configured to stabilize the directional cone on the planar surface.
17. The training system of claim 16, wherein the training path is configured to improve a user’s agility and/or speed.
18. The training system of claim 16, wherein the directional indicators of the plurality of directional cones are interchangeable.
19. The training system of claim 16, wherein each of the plurality of directional cones further comprises an identification tag.
20. The training system of claim 19, wherein at least two of the plurality of directional cones further comprise electronic components, wherein the electronic components enable intercommunication between the at least two of the plurality of directional cones.

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