A portable and free standing basketball retrieval and return device (10), the device including a basketball collector (11), a basketball return facility (12), and a support frame (13). The collector (11) has a body (14) extending between an inlet opening (15) and an exit opening (16) which openings (15,16) in use are spaced apart vertically. The inlet opening (15) is significantly larger than the exit opening (16) so that the collector body (14) funnels towards the exit opening (16). The return facility (12) is arranged to receive a basketball that passes through the exit opening (16) and to return the basketball to a home position remote from the collector (11). The return facility (12) includes a ramp (51) along which the basketball travels for return to the home position. The support frame (13) supports the collector (11) above a floor surface with the exit opening (16) aligned with the return facility (12). The ramp (51) is movable through an arc of at least 120° to alter the location of the home position, that movement being unimpeded by the collector (11) or the support frame (13).
This invention relates to a basketball retrieval and return device, in particular a portable and free-standing device, for retrieving and returning basketballs to a basketball player or shooter, to assist basketball training.

A significant part of basketball training involves the repetitive shooting for goal from different angles and distances from the basketball ring. During such training, significant time can be spent on wasted collecting or retrieving basketballs that have been shot, particularly those basketballs that have rebounded off the ring or backboard well away from the shooter. The amount of time taken to retrieve basketballs can be wasteful when the basketball shooter is training alone and is required to retrieve the basketballs him or herself.

Basketball retrieval and return devices have been proposed before. U.S. Pat. No. 5,016,875 discloses a free-standing portable basketball retrieval and return device, which includes a basketball ring, a netting funnel and a return ramp. One drawback with the device disclosed in this patent is that it is difficult to reposition the ramp to alter the end or home position to which a basketball is returned, because the support structure for the funnel projects alongside the ramp and therefore can impede movement of the ramp to either side (hereinafter referred to as "slowing" movement). The patent itself is silent on ramp movement. Thus, the basketball shooter is either restricted to taking shots from a particular position in front of the ring, or must return to the end of the ramp to collect a basketball and then move away from the ramp to the selected shooting position.

U.S. Pat. No. 4,667,957 also discloses a basketball retrieval device and while the majority of the disclosure of this patent is directed to the ball collector component of the device, the patent again illustrates the limitations associated with prior art free-standing devices, as they relate to the ability to alter the end or home position to which a basketball is returned. In U.S. Pat. No. 4,667,957, a pair of ramps is provided on each side of a support post of the supporting frame of the device in order to provide two return positions. While this increases the number of positions to which a basketball can be returned, it still is relatively inflexible and additionally, makes the device more complex and more difficult to set up and dismantle.

An alternative to freestanding devices are devices that are fixed to existing basketball ring structures. U.S. Pat. No. 5,746,668 illustrates one arrangement of this kind. However, the drawback with this type of device, is that the device is required to be fixed to the backboard of an existing basketball ring, which is very inconvenient and because of this, it normally means that the device is either permanently or semi-permanently attached to the backboard. Thus, this type of device is not very suitable for use with rings of actual basketball courts, unless the users are prepared to regularly mount and dismount the device.

Other forms of freestanding devices exist which employ sophisticated return devices. For example, U.S. Pat. No. 6,224,503 provides a retrieval and return device which includes an electro/mechanical ejection arrangement. Basketball which are collected by the device are ejected from the device by an ejection mechanism and advantageously, the direction of ejection is changeable and can be made to be constantly changeable to constantly vary the position to which a basketball is returned. While these devices are highly regarded, the major drawback is their expense, weight and storage size.

It is an object of the present invention to provide a basketball retrieval and return device that overcomes or at least alleviates one or more of the foregoing disadvantages of the prior art. In particular, it would be desirable to provide a device which can provide simple adjustment of the position to which basketballs are returned, can be easily installed and dismantled for storage and is easy to unblock.
arms that are connected to a central post and each of which extends laterally away from the post in an operational condition, the arms of the collector support have ends remote from the post which engage and expand the collector in the operational condition, the arms of the floor support having ends remote from the post for engagement with the floor surface,

[0025] each of the exit opening and the post being aligned generally coaxially.

[0026] The invention further provides a portable and free standing basketball retrieval and return device, the device including:

[0027] a basketball collector,

[0028] a basketball return facility, and

[0029] a support frame

[0030] the collector has a body extending between an inlet opening and an exit opening which openings in use are spaced apart vertically, the inlet opening being generally circular and significantly larger than the exit opening so that the collector body funnels towards the exit opening.

[0031] the return facility is arranged to receive a basketball that passes through the exit opening and to return the basketball to a home position remote from the collector, the return facility includes a ramp along which the basketball travels for return to the home position,

[0032] the support frame supports the collector above a floor surface with the exit opening aligned with the return facility.

[0033] Devices of some forms of the invention can advantageously permit the ramp to be movable through a wide arc without being impeded by other structural components of the device, in particular the basketball collector or the support frame. Thus, a user of the device can alter the home position easily and thus easily shoot from different angles without wasting time moving to and from the ramp end or having to make significant manual adjustment or the position of the ramp.

[0034] The present invention provides other advantages which will become apparent from the discussion that follows.

[0035] The return facility can include a guide in addition to the ramp, which is operable to guide a basketball which egresses the exit opening to the ramp for travel of the basketball along the ramp. In this arrangement, the support frame supporting the collector can be arranged to position the exit opening of the collector at a height which aligns the exit opening with the guide.

[0036] In some arrangements, two or more ramps are employed and in those arrangements, the guide can be arranged to selectively guide basketballs between the ramps.

The diverter can take any suitable form, and for example, can include a see-saw mechanism, which diverts a first basketball to a first ramp and a second basketball to a second ramp and then a third basketball back to the first ramp and so on. Other arrangements can be employed, such as electrical arrangements, although the preference is for non-electrical arrangements to be employed so that connection to an electrical supply is not required. The benefit of employing two or more ramps, is simply that a plurality of shooters can employ the device of the invention at one time and shoot from different angles.

[0037] It is preferable that the inlet opening of the collector is at least partially of a horse shoe or U-shaped form. While the sides or the collector can be straight or relatively straight, with a convexly curved front end, i.e. with the front end projecting forwardly or away from the backboard to a greater extent than if the inlet opening was square or rectangular, it is preferred that the sides are curved, preferably to the same or similar curvature as the front. Thus, the inlet opening can be generally circular, although as will become apparent from the discussion that follows, the inlet opening will not form a full or closed circle, but rather, will form the major part of a circle only.

[0038] The prior art generally discloses square or rectangular collectors. However, the area of collection of such shapes of inlet is less than if the inlet is formed curved according to the invention, such as a generally horse shoe or U-shaped form. According to the invention, if the inlet opening is formed to have a part circular shape, % circular shape for example, of a diameter D, the catchment area of the inlet opening is greater than if the inlet opening was generally square or rectangular with the same major diameter D. Additionally, if the square or rectangular collectors of the prior art are made larger to achieve the same area of collection as the present invention, the support structures for those collectors generally become larger and so tend to further impede the ramp against movement. Thus, an improvement in collection area is offset by a reduction in ramp movement. Still further, in a larger square or rectangular collector, the corners project too far from the ring, so making the device ineffective for closer range shooting practice in certain angles. This will become more evident from the figures which are discussed later herein.

[0039] In a horse shoe or U-shaped form as described above, the inlet opening defines a gap opposite the front end thereof, and the ring can project into the collector through the gap.

[0040] The curve of the inlet opening can be of constant radius, so that the inlet opening is part circular, or it can be part oval or ellipsoid, or any suitable shape. What is advantageous is that in some arrangements, the distance from the rim to the ring is substantially constant for a major portion of the extent of the rim.

[0041] The inlet opening can be defined by a generally horizontal rim. Deviations from absolute horizontal are acceptable, so that the rim could extend upwardly or downwardly from adjacent a backboard, however it is preferred that any deviation be only slight or minor. A major advantage of this is that the rim can be positioned relative to the ring and the shooter to cause the shooter to shoot at the optimum trajectory. This is because the height of the rim from the floor can be substantially constant, as can the distance from the rim to the ring. Thus, substantially the same shooting trajectory will be required from all angles around the ring. This differs from some prior art arrangements which have square or rectangular collectors, in which both the distance from the rim to the ring varies as well as the height of the rim relative to the ring. While these variations can be relatively minor, they nevertheless permit the shooter to shoot at a trajectory that is not optimum and thus they reduce the benefits of training.

[0042] The consistency in trajectory that can be achieved with the present invention, is an extremely important characteristic during shooting training. What is intended to be achieved during training is that the shooter continuously shoots at the same trajectory and learns that trajectory for later use during actual basketball games. Prior art devices seek to achieve the same consistency in trajectory, but fail given the use of collectors which have an inlet of square or rectangular
shape. Thus, the present invention is envisaged to provide much better training outcomes.

[0043] The inlet rim can have any suitable form, however in one form at least the forward end portion of the rim, but preferably the entire rim, is resiliently flexible. This can be provided by a resiliently flexible pole which extends through a sleeve or rings formed at a forward end of the rim. Any suitable pole can be employed, such as a solid fibreglass rod with PVC plastic outer coating with sections joined together if necessary such as by male and female threaded ends. The adoption of this arrangement facilitates ease in disassembly for collapsing, because the pole can be easily removed from the rim leaving the rim easily collapsible. Additionally, the pole can maintain the rim generally horizontal and in the generally circular or horseshoe shape that is preferred.

[0044] While a single rod can be provided, for ease of collapsibility and storage, two or three rods are preferred. Two of the rods can form a curved side of the rim, while the third rod can form the curved front of the rim. The back of the rim can be open.

[0045] The collector can be formed into a conical inverted pyramid, or any suitable funnel shape.

[0046] The collector can be formed to be removed from the support frame in its conical or funnelled condition, or it can be folded and removed. The advantage of the collector from the support frame in its conical or funnelled condition, is that it can be stored in that condition so that reassembly of the device does not require unfolding of the collector.

[0047] As explained above, the invention can provide for unimpeded rotation of the ramp through a significant arc of at least 120°. However, greater arc extents can be achieved, such as 150°, 180° or 210°. Even greater arcs of rotation can be achieved, although the maximum useful arc required is expected to be about 225°. The practical advantage of this is significant in permitting simple and unhindered slewing movement of the ramp to new positions relative to the ring. It is feasible for example, to move the ramp for each shot to constantly vary the shooting position and this can be achieved through a wide arc without having to dismantle any part of the device. This is a significant advantage provided by the present invention, which provides significant benefits in basketball training. Moreover, this is clearly not readily achievable in prior art arrangements in which the arc of movement is often restricted by structural parts of the device, so that only small angles of movement are available, or partial dismantling of the device is required to move the ramp from one position to the next.

[0048] Movement of the ramp through an arc can be achieved by supporting one end of the ramp, proximal the exit opening of the collector, for rotation. The support can be of any suitable kind, although in one arrangement, a rotatable platform is supported on the support frame. The platform could be a circular disc that rotates on a bearing supported on the support frame. By this arrangement, slewing movement of the ramp can be as simple as moving or sweeping the distal end of the ramp through the desired arc to reposition the distal ramp end where desired. This is a highly advantageous arrangement that allows the basketball shooter to select virtually any angle of shooting that is possible relative to a basketball ring. Additionally, it requires no disassembly of any part of the ramp or support frame unlike the prior art arrangements.

[0049] Moreover, the ramp can be supported on the floor surface on rollers, so that movement between angled positions is smooth and does not require the ramp to be lifted.

[0050] Other arrangements can easily be envisaged to provide for slewing movement of the ramp. For example, in a very simple arrangement, one end of the ramp can be secured relative to the support frame by a pin received within rotatably within an opening. Other arrangements are also possible.

[0051] The device of the invention can include a collector support and a floor support, each of which extend from a support post which extends generally vertically. In one arrangement, each of the exit opening of the collector and the support post are aligned generally coaxially.

[0052] In some arrangements, the ramp commences at a position which is offset from coaxial alignment with the exit opening and the post. In that arrangement, a guide can be provided, which is operable to divert a basketball from the exit opening to the ramp. As indicated earlier, the guide can divert basketballs between two or more ramps as can be provided in some embodiments of the invention.

[0053] In the arrangement in which the support frame includes a collector support, a floor support and a support post, the ramp can commence at a position intermediate both the collector and floor supports. This arrangement is one way in which the ramp can be allowed to move through the desired generally horizontal arc, unimpeded by either the collector or the support frame. Various other arrangements also exist.

[0054] One or each of the collector support and the floor support can be configured to have a plurality of arms that are connected to the support post and which extend laterally away from the post. In this form of collector support, the ends of the arms remote from the post can engage and support the collector, such as the rim of the collector. In this arrangement, any number of arms can be employed, although four major arms have been found to be suitable to support the collector at four spaced apart positions. Other minor arms can be provided for supplementary support, such as to form a gap through which the ring extends into the collector.

[0055] Advantageously, if the rim of the inlet opening of the collector is formed partially or fully curved as described earlier, such as by a resilient and flexible pole, the forward end and sides of the inlet opening can project further forward and sideways than the positions at which the rim is supported by the arms. This is different to prior art arrangements which employ generally square or rectangular openings, in which the supports for those arrangements often are required to be provided at the very front of the inlet opening. Thus, the present invention can provide, as indicated earlier, an inlet opening of more optimal shape and greater catchment area than in prior art arrangements and in particular, can position the supports out of the slew path of the ramp.

[0056] If either of the collector support or the floor support includes arms as described above, the arms can be pivotally connected to the support post so that the arms can pivot between positions in which they extend generally parallel to the post in a collapsed condition and laterally away from the post in an operational condition. By collapsing the arms in this manner, the device can be collapsed to a relatively small and easily manageable size, for ease with transport and storage.

[0057] In the arrangement discussed above, in which one or both of the collector support and the floor support include arms which are pivotally connected to the support post, the arms can additionally slidably connected to the post. By
connecting the arms in this manner, the collapsed height of the device can be less than the operational height, or at least, the collapsed height can be about the same as the operational height.

[0058] In an alternative arrangement, one or each of the collector support and the floor support can be removable connected to the support post, so that the device can be disassembled and the supports collapsed for transport and storage. For example, the collector support can be removable connected to the post, while the floor support is permanently connected to the post. The collector support can include a female socket for insertion over a male portion of the post to which the floor support is permanently connected. The female socket can be one end of a post which forms part of the collector support. The support post can therefore be constructed in a variety of ways and can be a composite post of a plurality of parts. Some of those parts can form part of the collector support and other parts can form part of the floor support, whereby connection of the various parts together forms the overall support post.

[0059] The collector support can be connected permanently or semi-permanently to the collector, so that both the collector support and the collector can be assembled to the device as one. In this arrangement, both the collector support and the collector can be collapsible together. This simplifies both the assembly and disassembly of the device where the device is collapsible.

[0060] The device can be relatively lightweight and in one arrangement, the floor support includes wheels so that the device can be wheeled into position. The weight of the device means that this can usually be done by one person only. Where the device includes a floor support which has a plurality of arms that engage a floor surface, two of the arms can include wheels or castors or the like at their distal ends, which either are in permanent surface engagement, or which are engageable with the floor surface when the device is to be moved. The other two arms can include means to prevent movement of the device, such as rubber stops or suction caps.

[0061] In one arrangement, the ramp can be adjustable in length, so that the distance to which a basketball is returned from the exit opening, can be varied. This allows a basketball shooter to vary the distance he or she is shooting away from the ring. Thus, the present invention allows for angular adjustment and distance adjustment of the ramp, thereby providing for maximum adjustment in the position to which a basketball is returned.

[0062] The home position to which a basketball is returned can be a stop position, i.e. the basketball is rendered stationary for pick-up by the shooter, or the home position can be a position at which the basketball leaves the ramp. In the former arrangement, the ramp can include a bull stop, which can be adjustably positioned along the length of the ramp. In the latter arrangement, the basketball can roll off the end of the ramp to bounce to the shooter, similar to game conditions in which the basketball is passed or returned to the shooter on the bounce.

[0063] The device of the invention is a free-standing device, such that it can be moved into position relative to a ring when required and taken away from the ring when not required. It is not necessary for the collector to be fixed to the ring or the backboard, but rather, the collector is moved into a position relative to the ring. The device can include bumpers to abut against the ring backboard, simply for correct positioning of the device.

[0064] For a better understanding of the invention and to show how it may be performed, embodiments thereof will now be described, by way of non-limiting example only, with reference to the accompanying drawings. In the drawings, the same reference numerals identify the same or like components:

[0065] FIG. 1 is a side perspective view of a basketball retrieval and return device according to the invention.

[0066] FIG. 2 is a front view of an upper portion of the device of FIG. 1.

[0067] FIG. 3 is a front perspective view of the device of FIG. 1, but including an extended ramp arrangement.

[0068] FIG. 4 is a detailed view of the upper end of the ramp of FIG. 3.

[0069] FIG. 5 illustrates a comparison between prior art arrangements and the present invention.

[0070] Referring to FIGS. 1 and 2, a basketball retrieval and return device 10 is illustrated which includes a collector 11, a return facility 12 and a support frame 13.

[0071] The collector 11 is formed from a flexible netting material 14, preferably synthetic netting, which extends between an inlet opening 15 and an exit opening 16.

[0072] The inlet opening 15 is significantly larger than the exit opening 16 and in that arrangement it can be seen that the netting 14 forms a funnel from the inlet opening 15 to the exit opening 16. FIGS. 1 and 2 show the inlet opening 15 as being part circular, and that is the preference for the shape of the inlet opening. The inlet opening will however be hereinafter described as being of a horse shoe shape, and that is intended to convey that the inlet rim is generally circular, or close to circular, as like a horse shoe.

[0073] The inlet opening 15 is shaped by a resiliently flexible pole, which is inserted through a zippered sleeve in the rim 17 of the opening 15 and that allows the rim 17 to take the substantially horse shoe shaped form illustrated in FIGS. 1 and 2. Moreover, the flexibility of the pole within the rim 17 ensures that the collector 11 is robust against the numerous impact loads that the rim 17 will suffer during use of the device 10.

[0074] Referring to FIG. 2, it can be seen that the collector 11 defines a rear gap or recess 18 which is formed in a substantially V-shape, which allows the collector 11 to be placed against a backboard 19, with the ring 20 extending within the recess 18. It is clear from FIG. 1 that the rim 17 of the inlet opening 15 extends to a position well above the ring 20.

[0075] The collector 11 is supported by a support frame, which comprises a collector support 25 and a floor support 26. Each of the collector support 25 and the floor support 26 includes a plurality of major arms 27, 28 that are pivotal between expanded and collapsed positions. The arms 27, 28 each extend from a central post 29. The collector support 25 is removable from the position shown for storage.

[0076] In the arrangement illustrated, each of the arms 27 and 28 extend away from the post 29 in the operative, expanded condition of the device 10 illustrated in FIG. 1. In that condition, the arms 27 extend from the post 29 and into connection with the collector 11 and the arrangement is such that with the arms 27 in the position shown in FIG. 1, the collector 11 is fully expanded, with the rim 17 being substantially horizontal and the exit opening 16 being positioned generally coaxially with the post 29.

[0077] Extending from the arms 27, are a plurality of ties 30 which attach to the exit opening 16, while a pair of minor arms
or struts 31 (see also FIG. 2), engage the base of the recess 18 to firmly position the recess base below the ring 20. The ties 30 are optional only and in fact, it has surprisingly been found that by omitting the ties, blockage or jamming of the exit opening 16 can be reduced. It seems that by allowing the exit opening 16 to move freely, the propensity for a basketball to jam or block the exit opening 16 when a plurality of basketballs have been shot into the collector 11, is substantially reduced.

The collector support 25 includes a female tube 32 which receives a male post 33. The post 33 is loosely or snugly received within the tube 32 to permit rotation of the collector 11 relative to the floor support 26. The collector support 25 is attached to the tube 32 at two spaced apart positions, namely, at the distal end 35 of the arms 27, and at a position 36 which is inboard of the distal end 35. The connection at position 36 is a fixed connection to the tube 32, while the connection at the distal end 35 is a sliding connection. Thus, as the arms 27 are moved from the operational position shown in FIG. 1, to a collapsed condition, the distal end 35 slides downwardly along the tube 32. It is to be noted that the struts 37 which extend between the arms 27 and the connector 36 are pivoted connected to the arms 27 and the connector 36, so that as the arms 27 are collapsed inwardly to a position generally parallel to the central post 29, the struts 37 rotate to allow that collapsing to take place.

The floor support 26 comprises four arms 28 that are pivotally connected to the post 29 by a slidable connector 40, which is slidable lengthwise of the post 29. Connected to the arms 28 are four struts 41 which extend from each arm to a connector 42, that is fixably connected to one end of the post 29. The arms 28 collapse inwardly to a position in which they extend generally parallel to the post 29, by pivoting movement of the arms 28 relative to the connector 40 and the struts 41. The struts 41 also pivot relative to the connector 42. When the arms 28 are collapsed inwardly, the connector 40 slides upwardly relative to the post 29.

Wheels 43 are fixed to one end of two of the arms 28, while rubber stops 44 are fixed to one end of the other of the arms 28. The rubber stops 44 assist to prevent movement of the device 10 when they engage a floor surface, while the wheels 43 facilitate movement of the device 10 simply by tipping the device 10 to lift the stops 44 from the floor and wheeling the device 10 to the desired position.

The device 10 further includes a return facility, which comprises a guide 50 and a ramp 51. As illustrated in FIG. 1, the guide 50 includes guide member 52 and guide members 53, with the guide member 52 extending from one end of the post 29, into connection with a ring 54, which is positioned coaxially with the exit opening 16. The guide members 53 are also connected to the ring 54 and to a further ring 55.

A basketball which enters the collector 11 and is funnelled through the exit 16 passes through the ring 54 and engages against the guide member 52. The effect of gravity is such as to cause the basketball to move past the guide member 52 and via the guide members 53 the basketball is guided through the ring 55. The arrows A show the path a basketball just described.

A basketball which has been guided through the guide 50 is directed to the ramp 51, which includes a framed arrangement 56 to capture the basketball. Upon depositing of the basketball at the end of the ramp 51 at which the framed arrangement 56 is disposed, the basketball will tend to travel down the ramp 51 in the direction of arrow B by virtue of the ramp 51 being set at a slight decline. Only a short section of the ramp 51 is illustrated in FIG. 1, while the full ramp is illustrated in FIG. 3 and will be described in relation to that figure later herein.

The end of the ramp 51 at which the frame arrangement 56 is disposed, is supported on a rotatable platform 60, which is supported on a strut 61. This arrangement is also shown in FIG. 4. A bearing 62 is interposed between the strut 61 and the platform 60 to allow the platform to rotate in the direction of arrow C (FIG. 1). The strut 61 is fixed at a bottom end thereof to a pair of the arms 28 by a bar 63 (FIG. 4). Channels 64 are fixed to opposite ends of the bar 63. The channels are U-shaped so that they can accept the arms 28 on which they are supported, while they are equally easily removable for storing the ramp separately from the other components of the device 10.

The arrangement of the platform 60, allows the ramp 51 to be pivoted more than 120°, unimpeded by either the collector 11 or the support frame 13. In fact, the ramp 51 can be pivoted beyond 225° in the arrangement illustrated. This is in contrast to many prior art devices, in which the support structure impedes any rotation of the ramp, so that a user of the device is not easily able to alter the home position to which a basketball is returned. Consequently, the prior art devices of that kind are less convenient to use.

FIG. 3 shows the device 10 with the ramp 51 shown in full. The ramp 51 includes an extension 66 on which is mounted a ball stop 67. The extension 66 can be disconnected from the ramp 51, so that the ramp is formed as shown in FIG. 1, with the end 68 suspended above the floor surface and allowing a basketball to freely travel off the ramp 51. In that arrangement, the basketball will bounce back to the shooter in a manner akin to the shooter having the basketball passed to him or her on the bounce.

In the alternative arrangement of FIG. 3, basketballs can accumulate in front of the ball stop 67.

The extension 66 is supported on a trolley 69, which comprises wheeled trolley ends 70 and 71, which extend from a bridging track 72. Advantageously, if the extension 66 is disconnected from the ramp 51, the extension 66 nests in the track 72 and the extension assembly can thereafter be wheeled away.

The arrangement of FIG. 3 is an adjustable arrangement, in that the extension 66 can be lengthened by the bridging track 72. This is achieved by moving the trolley 69 outwardly, so that the extension 66 extends into the bridging track 72. The ball stop 67 can be disconnected from the extension 66 and reconnected to the bridging track 72 at a suitable stop position.

Accordingly, the total ramp length for basketball travel, can comprise the ramp 51, the extension 66 and substantially the full length of the bridging track 72. However, it is possible to use only a portion of the bridging track 72 as required, so that the total length of basketball travel can be varied. The ball stop 67 can simply comprise a friction clamp on the bars of the extension 66 or the bridging track 72 and is easily removed and repositioned.

It will be seen that the trolley ends 70 and 71 can be collapsed inwardly generally parallel to the bridging track 72 and when the extension 66 is disconnected from the ramp 51, the extension 66 can also be collapsed to a generally parallel position relative to the track 72. Thus, the extension 66, the
track 72 and the trolley ends 70 and 71 all collapse to form an assembly which is easy to move and store.

[0092] It is noted that the device 10 as illustrated in the figures employs the guide 50 to redirect a basketball from the exit opening 16 of the collector 11 to the frame arrangement 56 of the ramp 51. In an alternative arrangement, the ramp 51 can extend to a position directly below the exit opening 16, so that the guide 50 is not required. Thus, the frame arrangement 56 can be arranged for mounting on the distal end of the post 33. The only drawback with that arrangement, is that the ramp 51 projects between the forward projecting pair of arms 27 of the collector support 25, thereby limiting the amount of slowing movement of the ramp 51.

[0093] FIG. 3 further illustrates a highly unique and attractive feature of the present invention, being an arrangement to unblock the exit opening 16 in the event that multiple basketballs have been shot into the collector 11 and have not aligned for proper exit through the exit opening 16. The unblocking arrangement includes a cord 80 which extends to a handle 81 at one end and to a pulley 82 at the opposite end. The cord 80 extends through the pulley 82 and down into contact either with or adjacent to the exit opening 16. Unblocking of the exit opening 16 is achieved simply by tugging on the cord 80, which jostles the exit opening 16 and any basketballs that are backed-up behind the exit opening 16 so that the basketballs can shift into a position at which they can exit through the exit opening 16.

[0094] The arrangement of the cord 80 simplifies the unblocking procedure of the prior art, which typically involves poking a rod or bar through the exit opening to jostle the basketballs which are backed-up behind it. With the cord arrangement, the cord can be routed to any suitable position, and for example, it could be routed to a position adjacent the ball stop 67, so that it is always close to the basketball shooter. Alternatively, in the position shown in FIG. 3, the cord is easy to locate and pull to effect unblocking of the exit opening 16.

[0095] It will be appreciated that other arrangements could be provided which operate in the same way as the cord 80. All that is necessary, is for the exit opening 16 to be vibrated or jostled in a sufficient manner to move the basketballs which are backed-up behind it and which allows the basketballs to realign behind the exit opening 16 for passage therethrough.

[0096] FIG. 1 shows the device 10 in a fully expanded or operational condition. It can be seen that the device is adjacent a backboard 19, and the ring 20 is located within the collector 11. Two of the arms 27 of the collector support 25 include bumpers 65 which abut against the front surface of the backboard 19.

[0097] To disassemble the device 10 for transport or storage, the collector support 25 is lifted from the central post 29 and any pole that is contained within the rim 17 is removed also. Thereafter, the arms 27 of the collector support 25 are pivoted to a generally parallel condition. This bunches up the netting 14 without requiring the netting to be disconnected from the arms 27. However, it is possible to remove the netting 14 prior to moving the arms 27 to the generally parallel condition, such as if it is thought that the net might be damaged by remaining connected to the arms 27 during transport of the arms 27. Alternatively, the netting 14 can be lifted from the arms 27 without removing the pole that is contained within the rim 17, and the netting can be stored in that condition. This eliminates the need to thread the pole through the rim when the device 10 is next used.

[0098] The arrangement comprising the strut 61 is removed from connection with the arms 28 and thereafter, the arms 28 can be collapsed to a position at which they are generally parallel, with the connector 40 shifting lengthwise of the post 29. The ramp 51 can be collapsed lengthwise as necessary and can be disconnected from the platform 60 if required.

[0099] By the above disassembly procedure, the device 10 can conveniently be disassembled for storage or transport and reassembly is the reverse of the above. It can therefore be seen that assembly and disassembly of the device 10 is convenient and simple and in fact can be completed by one person on his or her own. The normal disassembly and assembly time is about 4 minutes or under, which makes the device 10 very attractive for training purposes. Alternative to disassembling the device 10, the device 10 can simply be wheeled to a position for storage in an assembled condition and returned to the backboard 19 when it is required for training purposes.

[0100] Referring now to FIG. 5, this schematically shows a comparison between the catchment area of the collector 11, and the catchment area of two alternative collectors, which are formed to have a square rim. FIG. 5 is illustrative of the increase in catchment area against a smaller rectangular collector, and is further illustrative of the benefits of the circular rim of the collector 11 over a larger rectangular collector.

[0101] In relation to the circular collector 11, the rim 17 is supported at each of the support points 85 and 86. These support points correspond to the distal ends of the arms 27 shown in FIG. 1.

[0102] An alternative collector of a square shape is shown by S1 in FIG. 5. This collector has the same support points 85 and 86 as the collector 11. It is readily apparent from FIG. 5, that the catchment area of the collector 11 is greater than that of S1, the difference being in the cross-hatched area shown in FIG. 5.

[0103] The alternative collector represented by S2 has different support points 90, to provide an increase in the catchment area over the collector 11. However, while an increased catchment area is provided, the supports that extend to the support points 90 are more likely to impede ramp movement.

[0104] In addition, the square catchment area of each of the collectors S1 or S2, affects the shooting trajectory of a basketball as explained below.

[0105] The distance from the rim 17 to the ring 20 is substantially constant, which is clearly not the case with either of the collectors S1 or S2. Thus there is consistency in the trajectory about a wide angle about the ring 20 which is not the case with either of the collectors S1 or S2. For example, a shot which travels over the front support points 90 of the collector S2 must travel further than a shot which is taken between the front support points 90. However, a shot which is taken anywhere between the support points 85, requires the same distance to the ring 20. This is the case for at least about a 75° arc (about 150° in total) on either side of directly in front of the ring 20. This highly advantageous feature of the present invention provides for consistency in the trajectory of shots taken.

[0106] Moreover, appropriate shooting trajectories from over one of the support points 90 are shown in FIG. 1 by the paths T1, T2 in which the trajectory T1 relates to the circular collector 11, while the trajectory T2 relates to the square collector S2. It can be seen by these trajectories, that for a similar end point at the ring 20, the shooter must stand further back for the square collector S2. Thus, the device of the
invention is better suited to small children, because they do not have to shoot the basketball as far.

Moreover, the trajectory $T_1$ can be employed all around the rim 17 of the collector 11, because of the consistency in distance from the rim 20. This is not the case with the collector $S_2$, because while the trajectory $T_2$ is appropriate for shooting over the support points 90, the trajectory $T_1$ is appropriate for shooting directly in front of the rim 20.

The circular rim 17 therefore provides significant benefits over square or rectangular collectors, which principally have been employed in the prior art, by maximising the collection area and providing for consistency in shot trajectory.

The invention described herein is susceptible to variations, modifications and/or additions other than those specifically described and it is to be understood that the invention includes all such variations, modifications and/or additions which fall within the spirit and scope of the above description.

1-24. (canceled)

25. A portable and free standing basketball retrieval and return device, the device including:
   a basketball collector,
   a basketball return facility, and
   a support frame

the collector has a body extending between an inlet opening and an exit opening which openings in use are spaced apart vertically, the inlet opening being significantly larger than the exit opening so that the collector body funnels towards the exit opening,

the return facility is arranged to receive a basketball that passes through the exit opening and to return the basketball to a home position remote from the collector, the return facility includes a ramp along which the basketball travels for return to the home position,

the support frame supports the collector above a floor surface with the exit opening aligned with the return facility, and includes a collector support and a floor support, the collector support includes a plurality of arms that extend upwardly and that have ends which engage and support the collector, the floor support being positioned below the collector support and including a plurality of arms that extend downwardly and that have ends remote from the post which rest on a floor surface,

the ramp commences at a position substantially intermediate the collector support and the floor support and is movable through an arc of at least $120^\circ$ to alter the location of the home position, that movement being unimpeded by the collector or the support frame.

26. A device according to claim 25, the support frame including a support post which extends generally vertically and the arms of each of the collector support and the floor support being connected to the post and extending laterally away from the post.

27. A device according to claim 25, wherein the inlet opening of the collector is defined by a generally horizontal rim.

28. A device according to claim 25, wherein the inlet opening of the collector is defined by a resiliently flexible rim.

29. A device according to claim 28, wherein the resiliently flexible rim is formed by a resiliently flexible pole which extends through a sleeve.

30. A device according to 25, wherein the ramp is movable through a generally horizontal arc of at least $150^\circ$ unimpeded by the collector or the support frame.

31. A device according to claim 25, wherein the ramp is movable through a generally horizontal arc of at least $180^\circ$ unimpeded by the collector or the support frame.

32. A device according to claim 25, wherein the ramp is movable through a generally horizontal arc of at least $210^\circ$ unimpeded by the collector or the support frame.

33. A device according to claim 25, wherein one end of the ramp is supported for rotation to move through a generally horizontal arc on a rotatable platform.

34. A device according to claim 33, wherein the rotatable platform is supported on the support frame.

35. A device according to claim 26, each of the exit opening of the collector and the support post being aligned generally coaxially.

36. A device according to claim 35, the ramp commences at a position offset from coaxial alignment with the exit opening and the post.

37. A device according to claim 26, the plurality of collector support arms being pivotally connected to the post so that the arms can pivot between positions in which they extend generally parallel to the post in a collapsed condition and laterally away from the post in an operational condition.

38. A device according to claim 37, wherein the plurality of collector support arms are slidably connected to the central post.

39. A device according to claim 26, the plurality of floor support arms being pivotally connected to the post so that the arms can pivot between positions in which they extend generally parallel to the post in a collapsed condition and laterally away from the post in an operational condition.

40. A device according to claim 39, the plurality of floor support arms are slidably connected to the central post.

41. A device according to claim 25, wherein the ramp is adjustable in length.

42. A portable and free standing basketball retrieval and return device, the device including:
   a flexible collector,
   a return facility, and
   a support frame

the collector has a body extending between an inlet opening and an exit opening which openings in use are spaced apart vertically, the inlet opening being significantly larger than the exit opening so that the collector body funnels towards the exit opening,

the return facility is arranged to receive a basketball that passes through the exit opening and to return the basketball to a home position remote from the collector, the return facility includes a ramp for travel of the basketball along the ramp for return to the home position, and a guide for guiding a basketball from the exit opening to the ramp.

the support frame supports the collector above a floor surface at a height to position the exit opening above a guide of the return facility and to align the exit opening with the guide,

the support frame includes a collector support and a floor support, each of which includes a plurality of arms that are connected to a central post and each of which extends laterally away from the post in an operational condition, the arms of the collector support have ends remote from the post which engage and expand the collector in the operational condition, the arms of the floor support having ends remote from the post for engagement with the floor surface,
each of the exit opening and the post being aligned gener-
ally coaxially.

43. A portable and free standing basketball retrieval and
return device, the device including:
a basketball collector,
a basketball return facility, and
a support frame
the collector has a body extending between an inlet open-
ing and an exit opening which openings in use are spaced
apart vertically, the inlet opening being generally circu-
lar and significantly larger than the exit opening so that
the collector body funnels towards the exit opening.
the return facility is arranged to receive a basketball that
passes through the exit opening and to return the basket-
ball to a home position remote from the collector, the
return facility includes a ramp along which the basket-
ball travels for return to the home position,
the support frame supports the collector above a floor sur-
face with the exit opening aligned with the return facility.