

The invention relates to a training device for ball games.

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Many ball games make use of one or more goals into which e.g. a ball or a puck has to be thrown or kicked. As examples of such ball games, football, handball and ice hockey may be mentioned. Typically, well-known goals have a single rectangular opening, while they are closed by e.g. nets, plates or sheets on the other sides. While this is intended and expedient during ball matches and tournaments, it is less expedient for training purposes, especially for ball handling exercises, due to the very fact that it can only be used from one side at a time, and thus it is not possible for several persons to use the goal simultaneously for training purposes.

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EP 884 075 shows a double goal, which can be used from two opposing sides due to its two well-defined openings. Between the two openings the double goal is closed by a rebound-material which ensures that the ball is returned to the playing ground if it hits the goal but not one of the two goal openings. Also a round embodiment is closed by a rebound-material between two well-defined openings. Although this goal is an improvement compared to the traditional single-sided goal, because it allows two persons to train simultaneously, there is still a need for a training device which can be used by a larger number of persons training at the same time.

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JP 11-299922 discloses a play tool having a plurality of circular frame members. Ropes define a number of openings in the frame members, and nets are arranged between some of the ropes to form passages, e.g. in the form of holes, tunnels, rooms, walls or paths, in multiple frame layers. Thus these nets are arranged to form passages and not to catch a ball.

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Therefore, it is an object of the invention to provide a training device which can be used for catching balls from several directions simultaneously.

The device of the invention comprises a first ring member arranged in a first plane, a second ring member arranged in a second plane being substantially parallel to said first plane, and a number of bars connecting said first and second ring members to each other, so that a number of openings are defined between the ring members and the bars.

Such a device provides openings defined by the ring members and the bars in all directions when the device is placed with one of the ring members resting on the ground. Thus it is possible for several persons to train at the same time since each person is allowed to use a respective one of the openings. Further, the opening in the other ring member can also be used by persons training to drop the ball through a horizontal opening. When the device is placed with the planes of the ring members in a substantially vertical position the device may be rolled across the ground, which allows training in hitting a movable goal.

According to the invention the object is achieved in that the device further comprises at least one net arranged to catch a ball hitting one of said openings, said net being suspended in the space between said first and second ring members. In this way it is avoided that balls pass through the device, which would otherwise cause inconvenience to the persons using the device from the other directions. Further, the nets may define additional openings thus allowing an even larger number of simultaneous users.

In one embodiment, nets are arranged in planes substantially perpendicular to the plane of at least one ring member. This location of the nets is expedient for catching the balls from different directions.

Alternatively or additionally a net may be arranged between the peripheries of said first and second ring members. In addition to catching balls from different directions this net could also ensure that only balls hitting the opening of one of the ring members can enter the inner space of the device.

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In an expedient embodiment, at least one of said ring members has a circular shape. With this shape it is easier to roll the device, either during training with a movable goal or during transportation of the device. Alternatively, at least
5 one of said ring members is polygon-shaped. A device with polygon-shaped

ring members may be easier to manufacture. Other shapes, including combinations of the above, are also possible.

5 Said first and second ring members may have substantially the same size. In most situations this is a practical embodiment because of the regular shape of the openings in the device. Further, this shape of the device also facilitates the rolling of the device.

10 It is expedient when one of said first and second ring members is sufficiently heavy to ensure the stability of the device when the device is placed with said one ring resting on a substantially horizontal surface.

15 Said first and second ring members may also have different sizes. Typically, such a goal will be placed with the smaller opening at the top. A smaller opening at the top may be an advantage when training to hit a horizontal opening with the ball.

20 The device may further comprise a supporting base arranged at a distance from said first and second planes. This allows the device to be lifted from the ground in order to increase the level of difficulty when the horizontal opening is to be hit with the ball.

25 When the ring members of the device are of different sizes, it may further comprise a net formed as a basket and mounted on the smaller one of said first and second ring members. Such a net guides a ball hitting the horizontal opening to the interior of the device.

30 When the first and second ring members are of the same size, the device may further comprise a third ring member arranged in a third plane being substantially parallel to said first and second planes, said third ring member being smaller than said first and second ring members. This allows a combination of the training options mentioned above.

An expedient embodiment of the training device is achieved when said first, second and third ring members are circular-shaped and arranged coaxially, said first and third ring members are connected to each other by a number of straight connecting bars, said second ring member is arranged between the first and third ring members and is connected to the straight connecting bars by side bars, nets are arranged between the first and second ring members in planes substantially perpendicular to the plane of at least one ring member, a net is arranged between the peripheries of said second and third ring members, and a net formed as a basket is mounted on the third ring member.

The invention will now be described more fully below with reference to the drawing, in which

figure 1 shows a first embodiment of a training device having two ring members connected to each other by supporting bars,

figure 2 shows the device of figure 1 in a tilted position,

figure 3 shows the device of figure 1 provided with four nets,

figure 4 shows a training device provided with six nets,

figure 5 shows a hexagonal training device,

figure 6 shows a training device with ring members having different sizes,

figure 7 shows the device of figure 6 mounted on a base,

figure 8 shows a training device having a peripheral net and being mounted on a single supporting bar,

figure 9 shows a training device mounted on three supporting bars,

figure 10 shows the device of figure 9 provided with a basket net,

figure 11 shows a combined training device,

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figure 12 shows the device of figure 11 without the nets, and

figure 13 shows a different version of a training device without nets.

10 A first example of a training goal or training device 1 is illustrated in figure 1.
In this example the device 1 is constructed of two circular ring members 2, 3
having substantially the same size. The two ring members 2, 3 are connected
to each other by four connecting bars 4, 5, 6, 7 such that the two ring mem-
bers are arranged in two parallel planes having a distance corresponding to
15 the length of the connecting bars.

When the device 1 is placed with the ring 3 resting on the ground 8, as it is
shown in figure 1, the ring members 2, 3 and the connecting bars 4, 5, 6, 7
define four openings 9, 10, 11, 12 each of which can be used as a separate
20 goal during training with e.g. ball handling exercises. Arrows indicate the di-
rections in which a ball may be thrown or kicked into the four goal openings
9, 10, 11, 12. Further, the circular opening 13 in the upper ring member 2
may also be used in training exercises in which the ball has to hit a horizontal
opening, as is also indicated by an arrow.

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The training device 1 may be made of any suitable material, such as steel or
other metals, wood or a synthetic material, such as plastic. However, at least
the ring member 3 should be made of a material sufficiently heavy to ensure
the stability of the device when it is placed in the position illustrated in figure
30 1. Alternatively, the lower ring may be provided with other means for securing
the device to the ground, such as spikes or pegs. The dimensions of the de-
vice may vary depending on the type of training or type of ball game for
which it is to be used. There may also be used different sizes for children and

for grown-up people. A typical size for a device intended for children training football may be a diameter of the ring members of 1.5 to 2 metres and a distance between the rings of 1.2 to 1.5 metres.

5 The training device of figure 1 can easily be moved to another place by tilting to a vertical position as shown in figure 2. In this position the device can be rolled to the new place, where it is tilted back to the position of figure 1. However, the device can also be used for training purposes in the position shown in figure 2. In a stationary position, especially the circular opening 13 defined
10 by the ring member 2 can be used as a round goal. Again an arrow indicates the direction of a ball. More interestingly, however, the opening 13 can be used as a goal while the device is rolled by another person, which allows a player to perform the exercise of hitting a movable goal. Even the openings 9, 10, 11, 12 may be used as movable goals while the training device is
15 rolled.

As shown in figure 3, according to the invention the training device 1 may also be provided with nets 14, 15, 16, 17, which improves the training value of the device. The nets are attached to the connecting bars 4, 5, 6, 7 and/or
20 the ring members 2, 3 at the periphery of the rings, and in the middle of the device the four nets are connected to each other. The height of the nets correspond to that of the connecting bars 4, 5, 6, 7. The nets ensure that balls hitting one of the goal openings 9, 10, 11, 12 are caught, and thus they cannot pass through the device and cause inconvenience to the persons using
25 the device from the other directions. They also ensure that the goals of the device are more well defined. Thus as an example one goal with the goal opening 10 is defined by the two ring members 2, 3, the bars 5, 6 and the two nets 15, 16. Of course the top of the device defined by the upper ring 2, i.e. the opening 13, may also be closed by a net, but normally it will be more expedient to leave this opening open and also use this opening for training purposes
30 as described above. This training is even further improved because the four nets 14, 15, 16, 17 now divide this opening into four separate openings that can be used individually.

In figure 3 the four nets 14, 15, 16, 17 are shown aligned with the connecting bars 4, 5, 6, 7, which is often a convenient solution. However, the nets, or some of them, may also be mounted in other ways in relation to the bars.

5 Thus they may instead be used to subdivide the goals defined by the openings 9, 10, 11, 12, or the connecting bars may simply be used solely for the connection of the ring members to each other independent of the goal openings, which are then defined by the nets. Further, the number of nets need not be the same as the number of connecting bars. This is illustrated in figure
10 4 showing a device 21 having three connecting bars 22, 23, 24 and six nets 25, 26, 27, 28, 29, 30. Here, six goal openings are provided by the nets and the ring members although only three connecting bars are used. However, it will often be convenient to align each bar with one of the nets, as it is also shown here.

15 In the embodiments described above, the ring members 2, 3 have a circular shape. However, many other shapes of the ring members can be used as well. Thus, as examples, also elliptical- or polygon-shaped ring members could be used. One example of polygon-shaped ring members is shown with
20 the training device 31 having hexagonal ring members 32, 33. Except for the hexagonal ring members 32, 33 the construction and the function of the device 31 is similar to that of the device 21 in figure 4. It should be noted that polygon-shaped ring members need not be equilateral, i.e. the sections of the polygon could have different lengths. The ring members could also be com-
25 posed of straight sections in combination with sections formed as sectors of a circle, as long as the complete ring member constitutes a closed curve.

As shown in figure 6, the ring members may also have different sizes. The training device 41 has a smaller upper ring member 42 and a larger lower
30 ring member 43 connected to each other by the three connecting bars 44, 45, 46. In this case only three nets 47, 48, 49 are used, thus defining three goal openings. The advantage of this embodiment is that the smaller upper ring makes it more difficult to hit the upper horizontal opening 50, which is even

divided into three subsections by the nets 47, 48, 49. Thus a more demanding training is provided. The training may be even more demanding if the training device is elevated to a higher position, which is illustrated in figure 7. The training device 51 is similar to the device 41, but it is mounted on a foot or base 52. Three horizontal bars 53, 54, 55 connect the lower ring member 43 to a central plate 56 which rests on a vertical supporting bar 57. The lower end of the vertical bar 57 is mounted in the foot 52, which has to be quite heavy in order to ensure the stability of the training device. The training device 51 is used in the same way as the previous embodiments, but the higher level of the goal openings makes the training more demanding.

Another elevated version of the training device 61 is shown in figure 8. It differs from the device 51 in two ways. The supporting bar 63 is here connected directly from the lower ring member 43 to the base 62. Of course this type of support is most conveniently used when the device itself is made of a light material, because otherwise the joint between the supporting bar 63 and the lower ring member 43 would be affected by strong forces, which could result in bending of this joint. Anyway, the base 62 must be quite heavy to avoid tilting of the device. The other difference is that a single net 64 is arranged between and along the peripheries of the two rings 42, 43. The net 64 still has the function of catching a ball hitting one of the goal openings defined by the ring members 42, 43 and the connecting bars 44, 45, 46, but an additional effect is that only balls actually hitting the horizontal opening 50 are allowed to enter the interior of the device. Balls missing this opening are guided back to the playing ground by the net 64.

Figure 9 shows a training device 71 which is a modified version of the device 61 shown in figure 8. Instead of the single supporting bar 63 three supporting bars 73, 74, 75 here connect the upper ring member 42 to the base 72, while the lower and larger ring member 43 is connected to the three supporting bars 73, 74, 75 by means of three inclined side bars 76, 77, 78. The function of this device is similar to that of the device 61. Although the training devices 41, 51, 61 and 71 are shown with circular ring members, it is noted that also

in these embodiments the ring members may have other shapes, as it was described above.

As shown in figure 10, an additional net 79 in the form of a basket as used in basketball may be attached to the upper ring member 42. This basket will
5 guide a ball hitting the horizontal opening 50 to the central part of the interior of the device 71

Some of the embodiments shown above may also be combined. As an example, figure 11 shows a training device 81, which is a combination of the training device 21 of figure 4 and the training device 71 of figure 10. The lower part of the device 81 corresponds to the device 21 with the two relatively large ring members 2, 43 and the six nets 25-30 defining the six goal openings as described before. Similarly, the upper part corresponds to the
10 training device 71 with the smaller ring member 42, the larger ring member 43, the peripheral net 64 and the basket net 79. The three ring members, which are here circular and coaxial, are connected to each other by a number of bars. Three supporting bars 82, 83, 84 connect the lower ring 3 to the smaller upper ring 42, while the central ring 43 is secured to the supporting
15 bars by means of three inclined side bars 85, 86, 87. Of course the number of supporting bars and side bars could be larger or smaller than the three mentioned here.

The training device 81 has many training options. Placed on the ground as
25 shown in figure 11, the six goal openings defined by the six nets 25-30 and the two large ring members 3, 43 allow the device to be used for training in scoring goals from all sides simultaneously. At the same time the horizontal opening 50 defined by the smaller upper ring member 42 provides training in hitting a relatively small horizontal opening, which is a good exercise in ball
30 handling. The peripheral net 64 ensures that balls not hitting the opening 50 are returned to the playing ground, and of course the net 64 can also be used for scoring goals directly into the net.

If the training device 81 is tilted, the opening 50 in the smaller ring member 42 can be used as a small vertical goal opening, and by rolling the device on the two larger ring members 3, 43 it provides training in hitting a movable goal opening.

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To more clearly illustrate the construction of the training device 81, it is shown in figure 12 without the nets. Thus it is easily seen how the ring members 3, 42, 43 are connected to the supporting bars 82, 83, 84 and the side bars 85, 86, 87. The supporting bars could also be vertical as in the device 10 71 from figures 9 and 10. This is shown in the device 91 in figure 13, which is also shown without the nets. The vertical supporting bars 92, 93, 94 are connected directly to the smaller upper ring member 42, while both larger ring members are connected to the supporting bars with side bars 95, 96, 97 and 98, 99, 100, respectively.

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Although a preferred embodiment of the present invention has been described and shown, the invention is not restricted to it, but may also be embodied in other ways within the scope of the subject-matter defined in the following claims.

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P a t e n t c l a i m s

- 5 1. A training device (1; 21; 31; 41; 51; 61; 71; 81; 91) for ball games comprising:
- a first ring member (3; 33; 43) arranged in a first plane,
 - a second ring member (2; 32; 42; 43) arranged in a second plane being substantially parallel to said first plane, and
 - a number of bars (4, 5, 6, 7; 22, 23, 24; 44, 45, 46; 82, 83, 84) connecting said first and second ring members to each other, so that a
- 10 number of openings are defined between the ring members and the bars,
- c h a r a c t e r i z e d in that the device further comprises at least one net (14, 15, 16, 17; 25, 26, 27, 28, 29, 30; 47, 48, 49; 64) arranged to
- 15 catch a ball hitting one of said openings, said net being suspended in the space between said first and second ring members.
2. A training device according to claim 1, c h a r a c t e r i z e d in that nets (14, 15, 16, 17; 25, 26, 27, 28, 29, 30; 47, 48, 49) are arranged in
- 20 planes substantially perpendicular to the plane of at least one ring member.
3. A training device according to claim 1 or 2, c h a r a c t e r i z e d in that a net (64) is arranged between the peripheries of said first and second ring members.
- 25 4. A training device according to any one of claims 1 to 3, c h a r a c t e r i z e d in that at least one of said ring members (2, 3; 42, 43) has a circular shape.
- 30 5. A training device according to any one of claims 1 to 3, c h a r a c t e r i z e d in that at least one of said ring members (32, 33) is polygon-shaped.

6. A training device according to any one of claims 1 to 5, c h a r a c -
t e r i z e d in that said first and second ring members (2, 3; 32, 33)
have substantially the same size.
- 5 7. A training device according to claim 6, c h a r a c t e r i z e d in
that one of said first and second ring members (3; 33; 43) is sufficiently
heavy to ensure the stability of the device when the device is placed with said
one ring resting on a substantially horizontal surface.
- 10 8. A training device according to any one of claims 1 to 5, c h a r a c -
t e r i z e d in that said first (43) and second (42) ring members have
different sizes.
- 15 9. A training device according to claim 8, c h a r a c t e r i z e d in
that the device further comprises a supporting base (52; 62; 72) arranged
distant from said first and second planes.
- 20 10. A training device according to claim 8 or 9, c h a r a c t e r -
i z e d in that the device further comprises a net (79) formed as a basket
and mounted on the smaller one of said first and second ring members.
- 25 11. A training device according to claim 6 or 7, c h a r a c t e r -
i z e d in that the device further comprises a third ring member (42) ar-
ranged in a third plane being substantially parallel to said first and second
planes, said third ring member being smaller than said first (3) and second
(43) ring members.
- 30 12. A training device according to claim 11, c h a r a c t e r i z e d
in that
- said first, second and third ring members (3, 43, 42) are circular-
shaped and arranged coaxially,
 - said first and third ring members are connected to each other by a
number of straight connecting bars (82, 83, 84),

- said second ring member (43) is arranged between the first (3) and third (42) ring members and is connected to the straight connecting bars by side bars (85, 86, 87),
- 5 • nets (25, 26, 27, 28, 29, 30) are arranged between the first and second ring members in planes substantially perpendicular to the plane of at least one ring member,
- a net (64) is arranged between the peripheries of said second and third ring members, and
- 10 • a net (79) formed as a basket is mounted on the third ring member.