Alternatives to Expensive Equipment

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IF EVERY COACH HAD HIS OR her wish, there would always be plenty of money in the budget to purchase all of the equipment desired. For many of us, this is still just a wish, but it forces us to invent ways to save money while offering our athletes the best possible alternative to the higher-priced training equipment.

This article builds on previous articles by Genther (1) as well as Chandler and Reuter (2). Step-by-step models for making wooden training plates (Figure 1) and medicine balls of varying weights will be presented.

Constructing Your Own Training Plates
See Table 1 for equipment requirements.

• Step 1: On a 0.5-inch to 1-inch sheet of plywood, trace around a 45-lb plate, including the center hole of the plate. Trace as many patterns as possible onto the same sheet of plywood, wasting as little as possible.
• Step 2: Use an electric, handheld jigsaw to cut out the patterns. Do not cut out the center hole yet. Pay close attention to make sure that flat spots are not inadvertently created on the plate. (Note that it may be easier to skip straight to step 3 by substituting the side panels from cable, wire, or chain spools. These spools are sometimes thrown away by cable companies or hardware stores.)
• Step 3: For greater strength and durability, pair up plates. Glue them together with a generous amount of wood glue (Figure 2), and use appropriately sized wood screws to hold them together tightly (Figure 3). When putting the screws in, try to keep the edge of the pattern even all the way around. The use of C-clamps may help keep the plates from shifting or spinning if this becomes a problem.
• Step 4: After the glue has dried for at least 6 hours, drill out the center hole using a 2- to 2-3/8-inch hole saw drill bit (Figure 4).
• Step 5: Once the hole is completed, sand the plate so that there are no rough areas (Figure 5).

Constructing Your Own Medicine Balls
As previously reported by Chandler and Reuter (2), inexpensive medicine balls can be constructed using simple playground balls and water. This is an ingenious way of saving money when on a tight budget. The use of volleyballs, basketballs, soccer balls, or the playground balls mentioned in the article by Chandler and Reuter (2) will offer a wide variety of different weights. See Table 2 for equipment needs.

Water-Filled Ball
If an electric air pump or a hand pump that will siphon water is available, these devices can be used to fill up the ball. If neither of these are available, then follow the following steps (Figure 6).

• Step 1: Using any ball with an inflatable bladder, insert an empty syringe from a ball repair kit. These can be pur-
Table 1
Materials Needed for Plate Construction

- Plywood sheets 1/2 in. thick.
- Carpenters glue.
- Hand jigsaw (electric).
- Wood screw 3/4 to 1-1/4 in. long.
- Hand drill.
- Pencil or marker.
- A 2 to 2-1/8 in. hole saw bit.
- Sandpaper.
chased at most sporting-goods stores.
• Step 2: After taking out the plunger, fill the syringe with water and then push the plunger in, forcing water into the ball (Figure 7).
• Step 3: Repeat step 2 until the ball is full or reaches the desired weight. Pull the syringe out, and the ball is ready to be used. The weight of the ball will vary depending on the size of the ball and how full of water the ball is. This method does take a considerable amount of time.

Sand-Filled Ball
If the water-filled playground balls are not heavy enough for your training, the sand-filled ones may be more appropriate.
• Step 1: Cut a small "x" in the ball with a pocketknife or pair of scissors (Figure 8).
• Step 2: Insert a small funnel in the cut hole and fill the ball with sand (Figure 9).
• Step 3: Once the ball is filled, prepare the area for patching as one would patch a bicycle tire (Figure 10).
• Step 4: Tape over the patch with electrical, duct, or athletic tape. The best procedure we have found is to tape directly over the patch in a criss-cross fashion, completely encircling the ball (Figure 11). This helps prevent the patch from being torn off during training and improves the grip.

Surprisingly, medicine balls constructed this way are quite

<table>
<thead>
<tr>
<th>Table 2</th>
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<tbody>
<tr>
<td>Materials Needed for Medicine Ball Construction</td>
</tr>
<tr>
<td>Old rubber basketballs, soccer balls, volleyballs, playground balls, etc.</td>
</tr>
<tr>
<td>Pocket knife or scissors.</td>
</tr>
<tr>
<td>Sand.</td>
</tr>
<tr>
<td>Water.</td>
</tr>
<tr>
<td>Rubber cement.</td>
</tr>
<tr>
<td>Bicycle tire repair patch.</td>
</tr>
<tr>
<td>Athletic tape or electrical tape (optional).</td>
</tr>
<tr>
<td>Ball sealer/repair kit.</td>
</tr>
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![Figure 6](image6.png)
![Figure 7](image7.png)
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![Figure 7](image7.png)
![Figure 7](image7.png)

![Figure 8](image8.png)

![Figure 9](image9.png)

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![Figure 9](image9.png)
durable. One such medicine ball has lasted over 14 years without breaking. It weighs 27 pounds and has been used for the shot put, overhead throws, and throws for height, and it only recently has developed a crack in the outer shell. It should be noted that water-filled volleyballs have the greatest tendency to break during maximum-distance throws. All balls hold up well for partner exercises in which the ball is not dropped with great force. Always test the balls before trying any maximum-distance throws. Table 3 gives a complete list of various medicine ball weights and durability rankings.

- **Conclusion**

Although it will take some time, making one’s own equipment can be a real money saver. The equipment thus made is more expendable than purchased equipment because it can be easily and readily replaced if damaged. With some instruction, your athletes can be taught how to make their own plates or medicine balls. Imagine each of your athletes with his own medicine ball to use for conditioning: no more time spent waiting to use the equipment. The advantages definitely outweigh the time investment.

**References**


**Table 3**

<table>
<thead>
<tr>
<th>Ball type</th>
<th>Water-filled ball (lb)</th>
<th>Sand-filled ball (lb)</th>
<th>Durability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Playground</td>
<td>3–8</td>
<td>7–12</td>
<td>Highest</td>
</tr>
<tr>
<td>Volleyball</td>
<td>8–10</td>
<td>12–16</td>
<td>Lowest</td>
</tr>
<tr>
<td>Soccer ball</td>
<td>10–14</td>
<td>14–18</td>
<td>Moderate</td>
</tr>
<tr>
<td>Basketball</td>
<td>12–16</td>
<td>20–27</td>
<td>High</td>
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Weights vary depending on the volume of material used, type of sand used, and the dampness of the sand.

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