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Coach To Coach



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Coach to Coach provides USA Water Polo member coaches to ask our National Team staff questions about coaching. Questions can be submitted simply by writing to coachtocoach@uswp.org. Please submit your question, which coach you would like to answer the question and give your name, club and location. Submission does not guarantee a response. Your name will be withheld, if requested. No anonymous submissions will be considered.

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Basic Training for the Legs, By Ratko Rudic

Dear Coach Rudic, What is the best way to train for eggbeater? I know some teams do squats and ride bikes in the weightroom and run stadium steps outside, but what about in the pool? How should we plan the leg development of a 12 year old beginner? JT, California

Dear JT:

The importance of strong legs for water polo cannot be overemphasized. Time-motion studies show that water polo players spend from 60% to 70% of the game in the vertical or semi-vertical position. The frontcourt offense and defense are played mostly in the vertical position and play at 2 meters, both on offense and defense, requires particularly good legwork. Moreover, the man-up and man-down situations are played almost 100% in the vertical position making both the offense and defense entirely dependent upon the legs for success in this critical situation.

However, while it is true that the eggbeater kick provides the primary foundation for the game, on both offense and defense, it is only one of many, very complex biomechanical leg movements required for water polo. So, there is much more to leg training than just the eggbeater.

Your question is a good one because scientific studies show that the optimum age for learning the biomechanical movements of sport, when the skills are most easily learned and memorized for life, is between **the ages of six and twelve years**. So, the earlier our athletes are exposed to these movements, the better.

Many young players pick up the eggbeater almost immediately after

watching a demonstration, while others need extensive instruction. It is important to start with the basic floating position, with knees wide apart, feet turned out, thighs parallel to the water line, the torso bent at 45 degrees. The hands must skull close to the surface so as to be ready for any game situation. It is very important at the young ages to be sure that the players learn to get maximum downward propulsion (lift) from the legs and hands.

When first starting out, any complaints of knee pain should be taken seriously and young players should stop immediately. Generally, knee pain results from improper hip and/or leg movements or a lack of flexibility in the knees. In the case of the latter, flexibility exercises should be prescribed.

From the basic eggbeater movement, the youngest athletes can learn the following basic movements:

- 1) Using the eggbeater kick and hand movements to move forward, left, right and backward while in the vertical position
- 2) Using the eggbeater to move horizontally in the vertical position in all directions with one or both hands held high up out of the water (blocking)
- 3) Using the eggbeater to move horizontally in the vertical position, in all directions while holding the ball in the shooting position
- 4) Changing from horizontal (swimming) position to vertical (eggbeater) position and from vertical to the horizontal position.
- 5) Using the eggbeater to push forward from the vertical position (defending)
- 6) Using the eggbeater to push backward from the vertical position (protecting the ball or position)

Young players should begin with the basic and simple movements, gradually increasing the length of time and complexity of the exercises. At the National Team level, 25% of our practices are leg specific. At the younger ages it should be more because biomechanical movements and leg strength are so important for executing all of the basics – like passing, catching, shooting and blocking.

Kids love to play the game of water polo, but they must, at the same time, acquire the skills and strength necessary to make the playing meaningful and more fun. When young players cannot control the ball in the vertical position, or make good plays, their scrimmages more closely resemble swimming meets and jungle ball than water polo. So you must spend time on leg strengthening, vertical conditioning, and vertical ball handling skills. Also, you must take the time to explain each exercise and tell how it will

help them to become better water polo players.

In addition to the basic eggbeater movements already mentioned above, proper instruction in the techniques of the side stroke, breast stroke for water polo (keeping the head up and hips low) and trudgeon, are important for developing the type of kicks, leg and arm movements required for horizontal acceleration.

Once these basic skills are mastered, proper technique for more complex leg movements that require combinations of the eggbeater with strong scissor kicks, breaststroke kicks and flutter kicks should be taught.

An example of a complex combination of leg movements is when a driver rises up out of the water to shoot. First, as the ball is lifted, the eggbeater speeds up, the knees are brought near to the surface and close to the chest (the body is coiled like a spring). The body then straightens out as the rapid eggbeater switches to one or two breast or scissor kicks to get maximum propulsion and vertical height. The off hand skulls rapidly to assist the lift and the torso rotates and takes the ball back into the throwing position. At maximum height, the body twists and bends forward as the throw is executed. As the player drops back to the water, the hands skull and the legs switch back to a very rapid eggbeater to keep the head from submerging.

Another example is when a player lunges for a loose ball from a stationary vertical position. The arms move in a short breast or sidestroke motion and then to either a longer, more powerful stroke or rapid over arm strokes toward the ball. The legs execute rapid eggbeater, followed by a combination of breast and scissor kicks, followed possibly by flutter kicks as the body is extended to the horizontal position. As the ball is retrieved, a dolphin kick initiates the knees to move towards the chest as the player moves back to the vertical position and the torso twists 180 degrees as the arm pulls the ball around to place the body between the ball and the attacking defender.

The biomechanics of these movements are much more complex than simply practicing the eggbeater. Here are some additional situations where complex biomechanical leg and body movements are required:

- 1) All stops, starts (i.e.: bursts for fast acceleration starting from both the vertical and horizontal positions) and changes of directions (i.e.: v-back or defending in a zone)
- 2) Faking and shooting from the vertical/semi vertical position (i.e.: avoiding a field block). Note that each type of shot requires its own distinctive biomechanical leg and body movements.
- 3) Moving from a vertical or semi-vertical position to the horizontal position (i.e.: lunging for a loose ball - forward, left, right)

- 4) Moving from horizontal to a vertical or semi-vertical, or moving from a vertical or semi-vertical position to the horizontal position (i.e.: layout pass/shot, starts)
- 5) Vertical and semi-vertical jumping to block, intercept or catch the ball, shoot or pass

Some suggested training drills that help teach proper movements and both strengthen and condition the legs are:

Butterfly – The butterfly stroke with breaststroke kick. (Swimming at 45 degree angle The head should not go under water at any time. Strengthens the arms and legs and can be performed with or without the ball. A variation is to pause after each recovery and make every other stroke a vertical jump up.

Backstroke – More vertical than conventional backstroke and performed with a curved back, in a semi-sitting position with the eggbeater kick providing forward (rather than downward) propulsion. Variations include: add jumps every four strokes, changing from back to crawl every four strokes. Another variation is holding the ball behind the head in a passing position. As the player moves in a backward direction, the offhand skulls for support.

Breaststroke – The body is in a more vertical position than conventional breaststroke, with more emphasis on vertical lift than forward propulsion. A variation is to begin with hands in front doing eggbeater. As the hands start to pull, a breaststroke kick is performed providing both vertical and forward propulsion, at the end of the arm pull, the arms are thrust forward, over the water, the eggbeater resumes for a few kicks after the glide.

Side Stroke – Conventional sidestroke provides the basic leg and arm movements for all starts. When performing a water polo individual medley, the sidestroke can be substituted for the breaststroke. In addition to the conventional sidestroke, sidestroking forward with the ball raised in the shooting position is useful.

Freestyle – variations include swimming with the head out crawl, trudgeon, look swim or combination of swimming with other movements (i.e.: 2-4 strokes head out crawl, two strokes backstroke, breaststroke, butterfly, jumps, lunges, dribbling the ball or holding the ball in strong hand while head out crawl swimming).

[IM's using variations of the four basic strokes make excellent warm up exercises and can be done with and/or without the ball for all four strokes.]

Stop, start change of direction recognition drills - (i.e.: a) start on whistle, stop on whistle; b) change direction at each whistle; c) hold the ball up in a vertical shooting position, on the whistle, put ball on the water and

dribble, on the whistle stop, pick the ball up using the hand transfer technique to get into the vertical shooting position and advance forward, on the whistle, repeat); d) v-back at 30 degrees (swim forward 3-5 strokes, stop, bring knees forward, under body and scissor or breaststroke on back and water polo backstroke 3 –5 strokes in the opposite direction) e) wing out 90 degrees. (swim forward 3-5 strokes, stop, bring hips under the body and breaststroke or scissor kick to a 90 degree angle and take 3-5 strokes.

Jumps - (intercept, block, receive) on the whistle, left 45 degrees, right 45 degrees, straight up

Lunges - (intercept, retrieve, cut off opponent) on the whistle, from vertical, 2-3 strokes and reach left, repeat right, repeat forward, repeat turning 180 degrees backwards

Body Contact Exercises – pushing against a teammate back-to-back, pushing against a teammate facing each other, pushing against each other simulating all Center/2MD situations, wrestling and trying to sink each other, etc.

The most efficient way to train is not to spend a half hour dedicated to the leg drills. After difficult leg exercises, players need recovery. Instead, you can move back and forth from leg exercises to counterattack or passing/shooting exercises or you can combine them, as in the following examples:

Legs & Swim – Ten seconds of all out hands up eggbeater, on the whistle, sprint to the other end of the pool. A variation, in pairs, players wrestle (or push against each other or go back to back) for ten seconds, on whistle they sprint to end of pool. You can also reverse the drill by starting with the sprint and ending with wrestling or other leg work.

You will also get more leg work accomplished by always stressing the importance of legs and high body positions in all shooting and ball handling drills, including the warm up, as well as in scrimmages.

Once the basic movements are mastered, the leg work and high body positioning must be emphasized at all times in shooting, passing and vertical situations. By emphasizing proper technique at all times, scrimmages will also be useful for strengthening the legs.

Always, with young players, the most important objective of the coach is to improve techniques. Always positively correct mistakes and reward progress and correct movements with favorable comments.

As young players progress and advance from beginners to become more experienced players, they can gradually introduced to resistance drills with weights (water bottles, light medicine balls, weight belts) or stretch cords for pulling and pushing exercises. But a word of caution - start with very

light weights and **gradually** increase the resistance over time as they become more experienced players. While the legs and shoulders need to be strengthened, they also need to be protected.

On the National Team, we use a 1KG medicine ball for one-hand training and heavier balls (from 2 to 7KG) for resistance training and double arm throwing for strengthening both legs and shoulders. At the young ages, the technique for this double arm pass can and should be performed with a No. 5 water polo ball.

I also believe it is useful test the vertical register of players. Monthly timed tests can be made of beginning athletes. On the National Team, we test the players with the arms held straight in the air over the head and the chin out of the water using a 7 KG medicine ball. Jesse Smith has the National Team record of 55 seconds. Young players can perform this same test without weights.

In the weight room, we do semi-squats (Tony Azevedo has the team record of 200KG). Younger players should be introduced to the same exercises, without weights. As with all drills, at the early ages, proper instruction, observation and monitoring of technique is absolutely essential.

USA Water Polo has many good tapes that demonstrate the basic and complex biomechanical leg movements and many of the drills mentioned above. These very useful tapes include: Farago on Ball Handling (very good underwater footage on basic and complex leg work and stroke actions), Humbert on 2 meters, Wigo on The Driver and Schumacher on Defense.

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