Upper-Body Movement

The movement of the arms during the breaststroke is best learned through imagery. Picture a large bowl sitting just underneath the water's surface. When in the modified streamline position, the near edge of the bowl sits just in front of the chin, and the far edge is at the fingertips. The diameter of the bowl is about twice the swimmer's shoulder width, extending about half the width of the shoulders on each side of the body. Along the edge of the bowl is your favorite cake batter. The motion of the arms and hands during the breaststroke is as if you were gathering as much batter as you can in your fingertips and palms from the edge of the bowl.

From the modified streamline position, the arms begin to separate as the fingertips and palms move along the lip inside of the imaginary bowl. For the first few inches (or the first dozen centimeters), the arms remain straight, but for the fingertips to continue following the circle shape of the bowl, the elbows must bend. Take care not to form a V above the bowl by continuing to keep the arms straight as you begin to pull the water. Bending those elbows helps the hands follow along the edge of the circumference of the bowl (figure 2.12a).

When hands and forearms are near the bottom of the bowl and are about shoulder-width apart, the elbows should be bent tightly in about 90-degree angles and squeezed into the body. The forearms should be close to the rib cage, which the elbows are gently squeezing. The shoulders should be shrugged to initiate the movement of bringing the torso out of the water. Use the core muscles to continue lifting the head and upper torso out of the water at this time, which helps the arms and elbows complete the final inches of the circle (figure 2.12b). As the fingertips approach each other just under the chin and the elbows are beginning to squeeze the ribcage as just noted, still scraping batter off the edge of the bowl, turn the palms inward so that the pinkie sides of the hands meet to form a platform on which to lift the batter to the face (figure 2.12c).

Begin to move the hands forward as the head drops and shoulders relax. The face should come close enough to the hands to lick the batter, keeping elbows squeezed together and palms up. As the hands move past the head and the arms extend away from the body, rotate the palms outward so that by the time the arms are almost at full extension and the hands reenter the water, the body is returning to the modified streamline position (figure 2.12d).

Kicking

As the fingertips are gathering batter, the bottom half of the legs also complete an arc-like pattern. Unlike the other strokes, in which the toes are pointing back away from the body, the ankles during the breaststroke are at 90-degree angles to the legs at all times unless in the streamline position. The ankle angle is important to the power transfer from the legs to the water.

The kicking motion has three distinct phases: up, out, and together. From the modified streamline position, the knees bend so that the flexed heels come straight toward and almost touch the buttocks. This is the Up phase.

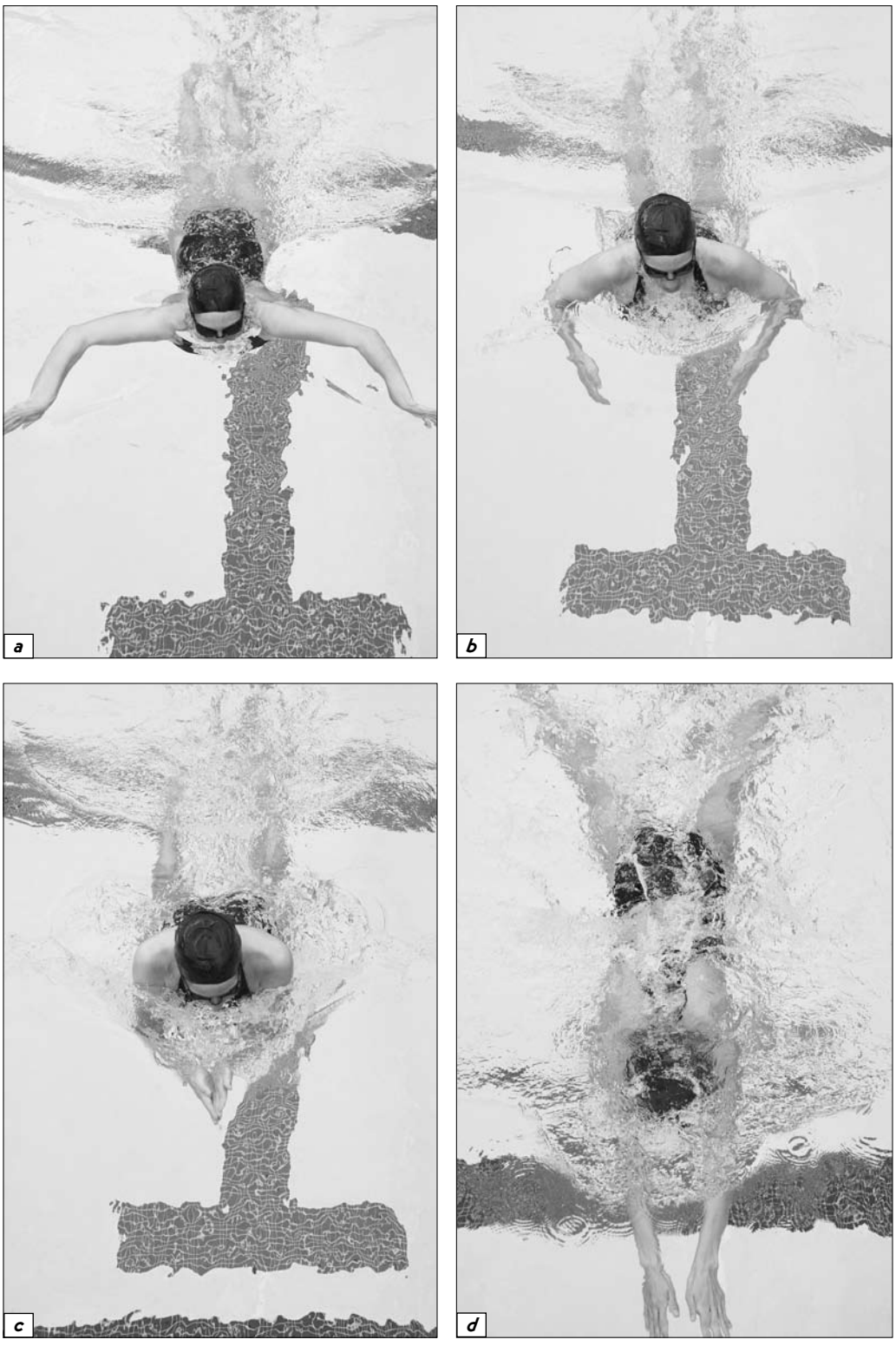

Figure 2.12 Upper-body movements for the breaststroke: *(a)* the elbow bend, *(b)* the inner pull, *(c)* finishing the pull, and *(d)* the forward push.

Heels should be in line with the shoulders and turned inward so that toes point to the sides of the pool. The upper legs should be in streamline position with knees close together but not touching; ankles should be at 90-degree angles (figure 2.13a). This position requires good flexibility of the quadriceps muscles and the knee joints.

From the Up position, the knees twist out so that each foot travels through the water in a symmetrical semicircle away from the midline of the body. As the legs rotate in the arc shape, the knees almost touch as they work as a lever in moving the bottom half of the legs (figure 2.13b). This is the Out phase. Done properly, this phase is felt in the outer hip as the hip muscles work to move the feet away from and then back toward the body. Ankles should remain at 90-degree angles to the lower legs; the bottoms of the feet should be parallel to the pool wall at the end of the lane. This imagery is important because the power in the kick comes from the bottoms of the feet pushing against the water in the same way that power is created when the feet push off a wall.

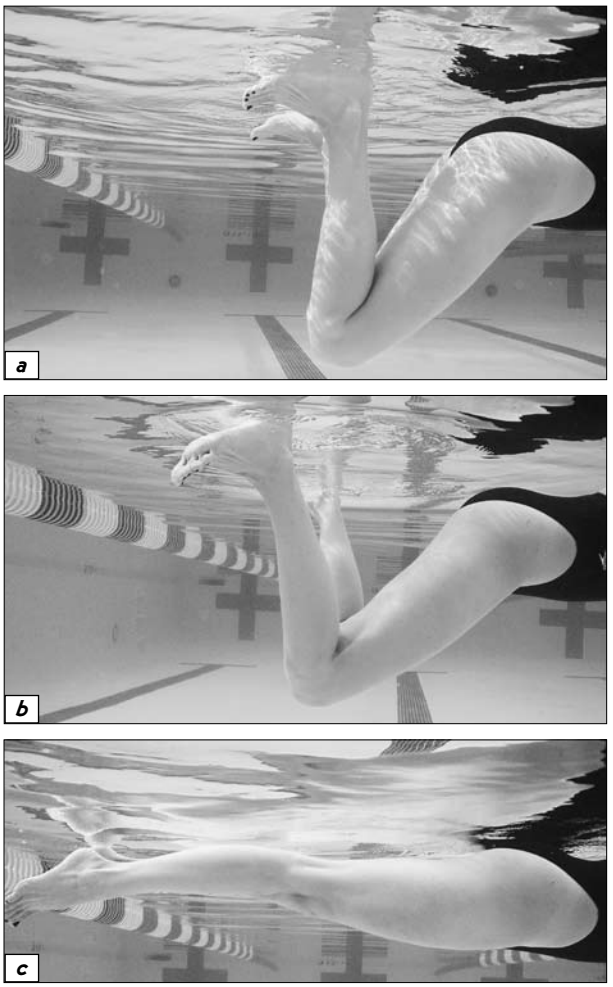

Figure 2.13 The breaststroke kick: *(a)* up, *(b)* out, *(c)* together.

The Out phase ends as the legs straighten and the heels kick into the Together phase, which is back in the streamline position (figure 2.13c). The ankles remain in that 90-degree angle the entire time to maximize the power transfer from the legs through the feet against the water. The only time the toes are pointed away from the body is briefly when they return to the streamline position.

The most common mistakes in the breaststroke kick are not keeping the ankles at 90-degree angles, moving the legs asymmetrically during the Out phase, and drifting into a sidestroke kick in which knees stay together but calves move apart to form a V with the lower legs. If swimmers unfamiliar or inexperienced with the breaststroke choose to try to incorporate the stroke into their training, they should do so gradually. The

strain the kick places on the knees could cause knee pain if the muscles in the legs aren't slowly adapted to the motion.

Timing

Although the movements of the upper body and legs are two separate actions, the timing of these actions is important to maximize power and stay balanced. The movements of the upper body and lower body should start and stop concurrently.

As the hands begin to go out, the feet begin to come up. As the elbows start to bend to accommodate the circumference of the batter bowl, the feet go out. As the hands make their way toward the mouth for the batter to be licked, the feet begin to come together. The final thrust in the water with the legs helps the upper body dive forward toward the streamline position, which the upper body and lower body reach simultaneously. It's as if you kick your hands forward in the Together phase.

Breathing

The upper-body movement of the breaststroke allows for a natural breathing pattern. As the fingertips trace the last part of the circumference of the bowl and elbows are tight against the rib cage, the lower and middle back muscles contract to arch the back and lift the head and upper body out of the water at a 45-degree angle. The arching of the back is similar to doing a backward half sit-up or a rocking motion. You arch up, and then you rock down. That motion also helps your fingertips trace that last bit of the bowl very close to the body.

Breath is taken from the time the body begins to rise until it reaches its highest position out of the water. Then, when the body is arched back, forearms are touching the rib cage, fingertips have met, and feet are in the Out position, returning to the streamline position is as simple as relaxing the back muscles, kicking the feet together, shooting the hands forward, and placing the head back into the water. The mouth and nose should be exhaling by the time the face and head return to the water, and the face and eyes should end up staring directly at the bottom of the pool.

Pull-Down

When swimming freestyle or backstroke, the forward momentum in the streamline position after starts and turns is aided by a flutter kick or dolphin kick. The underwater pull-down performs the same function when swimming breaststroke, the only stroke in which the upper body is used in some way other than to maintain streamline position. The hands move to the hips, pushing water to provide more momentum. They then return to streamline position during the kick portion of the pull-down, allowing you to return to the surface of the water. The arm and hand movements provide forward momentum when pushing them toward the hips and as little drag as possible when moving them back to streamline position. This is a different motion than the breaststroke stroke itself.