

# Bio Mechanical Advice On Stroke Production

Swimming is a complex and demanding sport that requires a combination of strength, endurance, and technique. Of all the strokes in swimming, the crawl stroke is the most popular and efficient, and it is the focus of this article. The crawl stroke is a continuous, overhand stroke that propels the swimmer forward through the water. It is composed of four distinct phases: the catch, the pull, the push, and the recovery.



## POWER TENNIS SECRETS: BIO MECHANICAL ADVICE ON STROKE PRODUCTION by Richard Hasse

★★★★★ 5 out of 5

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The catch is the initial phase of the stroke, where the swimmer's hand enters the water. The pull is the second phase, where the swimmer pulls their hand through the water in a backward motion. The push is the third phase, where the swimmer pushes their hand forward to propel themselves through the water. The recovery is the fourth and final phase, where the swimmer's hand returns to the starting position.

Each phase of the crawl stroke is important for maximizing stroke production. However, the pull phase is particularly critical, as it is the phase where the most power is generated. By understanding the biomechanics of the pull phase, swimmers can learn how to improve their stroke technique and increase their overall speed and efficiency.

## **Biomechanics of the Pull Phase**

The pull phase begins when the swimmer's hand enters the water. The hand should be placed in the water with the thumb pointed down and the fingers slightly spread apart. The elbow should be bent at a 90-degree angle, and the forearm should be parallel to the water's surface.

As the swimmer pulls their hand through the water, they should keep their elbow bent and their forearm parallel to the water's surface. The hand should be pulled back in a straight line towards the swimmer's hip. The swimmer should use their lats, biceps, and triceps to generate power for the pull.

At the end of the pull phase, the swimmer's hand should be extended behind their hip. The elbow should be fully extended, and the forearm should be perpendicular to the water's surface.

## **Common Mistakes in the Pull Phase**

There are a number of common mistakes that swimmers make during the pull phase. These mistakes can prevent swimmers from generating power and can lead to injuries.

One common mistake is to drop the elbow during the pull phase. This can cause the swimmer to lose power and can lead to shoulder pain.

Another common mistake is to pull the hand too high during the pull phase. This can cause the swimmer to lose speed and can lead to wrist pain.

Finally, some swimmers make the mistake of not fully extending their arm at the end of the pull phase. This can cause the swimmer to lose power and can lead to elbow pain.

### **Tips for Improving the Pull Phase**

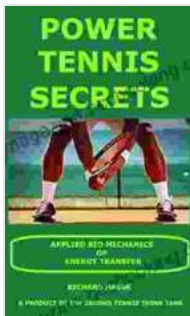
There are a number of things that swimmers can do to improve their pull phase. These tips can help swimmers generate more power, improve their speed, and reduce their risk of injury.

One tip is to focus on keeping the elbow bent at a 90-degree angle during the pull phase. This will help to keep the swimmer's forearm parallel to the water's surface and will help to generate more power.

Another tip is to pull the hand back in a straight line towards the swimmer's hip. This will help to keep the swimmer's body in a streamlined position and will help to reduce drag.

Finally, swimmers should focus on fully extending their arm at the end of the pull phase. This will help to maximize power and will help to reduce the risk of elbow pain.

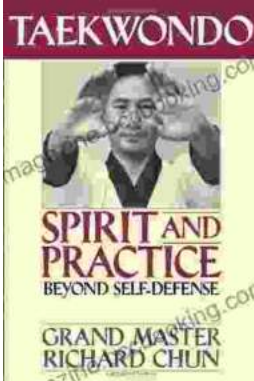
The pull phase is a critical phase of the crawl stroke. By understanding the biomechanics of the pull phase and by making the necessary adjustments to their technique, swimmers can improve their stroke production and increase their overall speed and efficiency.



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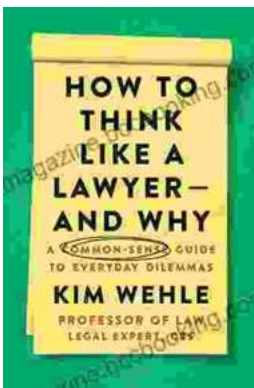
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