



Proper Technique Freestyle (Crawl) Swimming - Important Component For Performance

KEYWORDS

technique, crawl, performance

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ABSTRACT Knowledge and learning proper technique sport swimming pool process is a very important component in achieving athletic performance, so finding this matter, made researches over time will improve the biomechanics of sports techniques in the process.

It is the fastest method of swimming sport in most any contest: 50, 100, 200, 400, 800, 1500m and the marathon in the water, triathlon, modern pentathlon, etc.

In these circumstances we believe that the biomechanical efficiency can be tested swimming movements seeking to achieve "the highest speed - with the fewest, but energetic movements" (regime can not be achieved by technical mistakes!).

Lately the pace of approvals of new world records kind of low and it is expected that in future "the answer" do not come in "technical" or "training", but from a "selection" biotype, the most appropriate to be repeated series of very vigorous rowing the length of time longer, and in these conditions probably "swimmer model" will vary sensitive swimmers next century may resemble some tall athletes, thin, supple, lightweight and very vigorous - the current version is given by "bodies ectomorph" bulky able to paddle as energetic, but with shorter arms, shorter due to their size.

Performance in Crawl increased and due to continuous improvement processes and return home. The new "model" home wastes no time with all kinds of tricks, but urges swimmer to directly enter the contest, diving shallow, and especially during the starting as quickly is possible.

Current technique used by "stars" shows a swimmer swimming which finishes quite sunk, but this allows for a rowing deeper and therefore more powerful and at the same time, being submerged, the body becomes noticeably lighter and easier to propelled in the water. Tempo swimming is lower, less compared to other years or other periods. This is due to the increasing strength of oars and a setback motion inferred from technical error free.

The optimal tempo diminished growth corresponds directly proportional to "Unit Length Oar" (ULO - it calculates by dividing the number of cycles swimming distance), high-waisted swimmers convenient manner.

Technique and tempo as described, serve permanent manifestation constant swimming, both in terms of technical accuracy and effort of the parameters.

Body posture:

the body is lying on his chest, tight water in a very small angle to the horizontal (3-5 degrees) with head and face in water, up to the forehead, eyes forward. Shoulders and back are in the water, legs stretched, slightly sunken, depending on individual characteristics (morphology, buoyancy factor), each performing a position more or less able to advance.

The leg movement's:

the legs performs up and down in the vertical plane, which are large, with peaks oriented towards the inside hands and heels apart. Impulse movement starts at the hip and continue to thighs, calves and feet. Biomechanical foot movements are symmetrical and contain two alternative phases: descending (active) by lowering the foot, finished with a whipping paw (more relaxed ankle) and bottom (passive) with lifting the leg up to the surface. The heel can break the surface. Both phases are performed rhythmically equal strength and amplitude.

Mistakes:

shear legs too far apart and taut or too immersed, therefore the lack of referral, low amplitude ("trembling"), the result: no referral, lack of mobility in the ankles, paws straight, result: reverse swimming;

The arm movements: is a sequence of alternative cyclical movements (rowing arm while the other performs the return, plus slippage). Rowing starts perfectly stretched arm position to the forward direction, with the palm with the fingers almost superimposed on imaginary midline elbow is raised by a slight internal rotation of the arm articulation on the scapula, shoulder upper mobilized so more close head circumference.



Figure 1
The arm movements
(graphics Swimming manual, FINA TSC, Seul, 1988)

Arms made from biomechanically a cyclical movement, symmetrical and alternative. They have an air path and one with water. Thus, a cycle of arms consists of completing each of the arms of the two phases: active (water-propelled) and passive (air-motive power). Rowing is done on a sinusoidal trajectory, start by pressing the water to the side, then traction, near the midline of the trunk and ends by pressing accelerated to hip-whipped, until almost final extension arm.

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Figure 2
Rowing: press, tensile, push
(graphics Science of swimming, J. Counsilman, Bloomington, Iowa, 1974)

We distinguish three moments: A - arm entry into the water, B - traction; C - pushing.

A - after the execution path through the air, slightly bent elbow arm contact with water in the following order: thumb, palm slightly twisted slant outward forearm following complete extension of the elbow, followed by shoulder arm with a new twist of the hand to intention trapping water inside.

B - traction runs on a sinusoidal trajectory, resembling the letter "S" elongated. Palma starts shooting water back through gradual flexion of the elbow until the angle of 90 degrees, changing the position of the wrist, so as not to decrease the pressure on the water. Continuous shooting up to the shoulder line where time begins "C".

C - Continuous traction pushing through the gradual stretching of the elbow to the thigh, palm keeping the pressure on the water by changing the position of the joint, following the path of the "S" 's, to the full extent of the arm on the side.

STAGE PASSIVE -

in this phase, the arm go through the air by lifting the elbow shoulder helped by turning to the longitudinal axis of the body and continue with the road passing through the right hand shoulder forward, preparing for a new entry into the water, through a small external rotation of the shoulder joint.

The return has three phases: hand out of the water by raising and leading arm so the elbow bent over the shoulder joint (control - a triangle made of "shoulder-elbow-hand" with the scapula more mobilized to allow passage slap the water surface), then leadership palm looking forward direction of advance (a move helped by relaxation and action of gravity), and finally, the customary and necessary, break slip.

An accurate representation of the crawl process is successful position characteristic expression "boomerang" that comes from practicing Australian swimmers - raising the elbow leads the arm over the water and over the shoulder (which he, in turn, is involved in a movement lifting allowed increased mobility of the scapular - humeral articulation, mobility specific performance swimmers).



Figure 3
Raise elbows...!
(graphics Swimming manual, FINA TSC, Seul, 1988)

If the recovery phase described as one important role of the elbow, a landmark easy to follow, the phase of rowing, also has a vital role. Depending on how it will be positioned and maintained during of rowing, palm sized swimmer, the efficiency will increase proportionally.

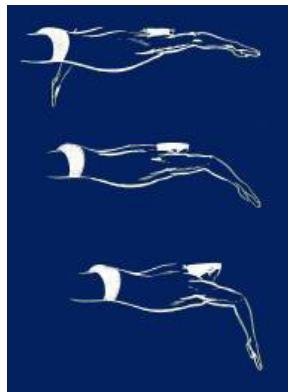


Figure 4
Elbow position during rowing
(graphics Swimming manual, FINA TSC, Seul, 1988)

Mistakes:

At A: water entering the head arm or elbow bent, decreases the efficiency of the whole traction water contact arm (cracked), elbow water hampers advancement;

At B: traction - arm lowers efficiency; hand that cut water or "comfort" forward speed decreases;

At C: arm out of the water too early, decreases efficiency, increases fatigue, hand water escaping decreases forward speed.

To make the arm to grab water as far as possible (see the role of break slip), indication the correct result from the expression "elbow up" or "bend forward". He let his elbow down, be determined to be defective breathing movement for change unwanted sliding position of the body is considered a major mistake, moving unacceptable crawl, especially beginners who may remain with this technical defect. May bend down home leg movements decreased intake which induces reflex urge to seek new water points support arms support necessary to sustain momentum first flotation and less timing advance, so the swimmer will try to "cling", to "climb" the water instead to "skate", to slide on it.



Wrong



Right

Figure 5
(graphics Swimming manual, FINA TSC, Seul, 1988)

Another frequent mistake by beginners is "dragging" legs positioned to water depth, which is reflected on the submission made to perform accurate arm movements.



Figure 6
Improper movement of the legs
(graphics Swimming manual, FINA TSC, Seul, 1988)

The key to success, the success in getting a move efficient by using arm movements is given timing synchronization "whipped push" water (end of rowing) relating to termination return (end slipped the return).

Coordination arm movements with breathing: from the outset, it must be said that the act of breathing is performed both by mouth (mainly) and nose (expired airflow is tasked to evacuate water reaching the respiratory tract).

I noted three phases, each with a set of different indications: inspiration + exhalation + apnea.

Inspiration (start turning movement of the head) is the last landmarks of rowing hand (pushing whipped), until the end of the first part of the return arm (passing over the shoulder). Particularly favorable moment is specific to each swimmer and defines "style" it. It is run by a back side of the head with the chin towards the chest + half + water cheek lips mouth water brought to the vicinity where you can breathe easy! Time is short, this is why the general recommendation "not greedy to pull more air!" is perfectly valid.



Figure 7 Specific respiration

This twisting of the head is the only asymmetrical movement of sport swimming technique and it should not generate major changes in body position, meaning swimming direction or pace, the cyclicity movements.

If the contractor back too much will cause a rollover head on one side of the body, if the executor head up too much to be able to breathe easily will damage the horizontal position of the body, the legs will sink and the forward resistance will increase, if the contractor will draw more air in the next phase of exhalation expel difficulties will arise which will cause repeated cycles 3-4 premature fatigue.



Figure 8
Two ways correct, but perform different inspiration: a novice and elite athlete

Breathing usually is unilateral, the rhythm of the breathing cycle arm, the so-called „breathing the two arms“. Inspiration is carried out by turning the head to arm rowing, starting on time and ending its push with the arm out of the water. Follow a path for apnea arm through the air.

Sleep apnea - it immediately act to inspire, is a normal phase that allows increased air pressure relative to facilitate the achievement of a sufficient exchange lung terminal. Sleep apnea should not take too long - it will be considered completed when the air in the lungs brought expresses its magnification effect, the buoyancy, and air will be expired.

Expiration is the phase of the other arm and drive continues until a new position of the arm, initially, at the time of pushing.

The main objective of a good exhalation the air is expelled to be quantitatively equal to the inspired air. Any deviation from this golden rule will result in immediate respiratory distress and impaired benefits.

In great contests, many winners complete without effort to show no signs of respiratory distress, the most important thing in evolution that just ended: the balance between inspiration and expiration is so perfect that the swimmer does not seem tired in any case do not show any sign of mechanical fatigue (choking), so common in most beginners.

In competitions, depending on the sample using bilateral breathing (breathing to 3-5 arms), alternative, making it once on one arm, then the other or combined.

As specific crawl process, with head turning sideways in the

mouth forming an air gap favoring inspiration. To create this condition, the head is oriented towards the shoulder mouth.

Mistakes:

if head position is too high, facing forward or too submerged, water enters the mouth, inspiration incomplete or delayed, leading to choking or stopping exhalation incomplete results in premature fatigue.

Coordination of movements of arms and legs breathing:

in a crawl cycle, coordination is given by two movements of arms (each running the propulsive phase and non-propelled), concurrently with the execution of a number of 6 foot beats and breathing. It proposes the following progress: from the position of the right arm into contact with water, left arm ends and begin pushing traction with continued inspiration, legs already executed three beats (left, right, left). Continue right arm traction, and the beginning of the air way left arm starts apnea, continuous foot motion. Right arm gone from pushing, left with water on early expiration. The last two times to close the cycle are pushing right arm ends, left continuous stretching with exhalation. Feet executed properly pace the number 4,5,6, respectively, the right, left, right.

Used in crawl long distances, some swimmers use only coordination 4 and even 2 beats feet, the feature beginners. Presents some peculiarities: lower energy consumption, a posture with the head submerged, so more restful, can be crossed and used more than men, or right -range used by women.

Eyes must be open, so the inspiration phase and in water, with a short break when locked on entry and exit from the water.

Mistakes: correlation with arms respiration leads to flounder, chaotic, high head position, body position changes, sinking legs feet incorrectly executed movements (apart, rigid), make a wave movement, technically incorrect execution phases active arms related to a faulty breathing leads look „rolled swimming”.

Exhalation is „key” to success in the practice of swimming! Making them in terms of proper technique will ensure major condition of the expression: „Swimming is the art of breathing !”

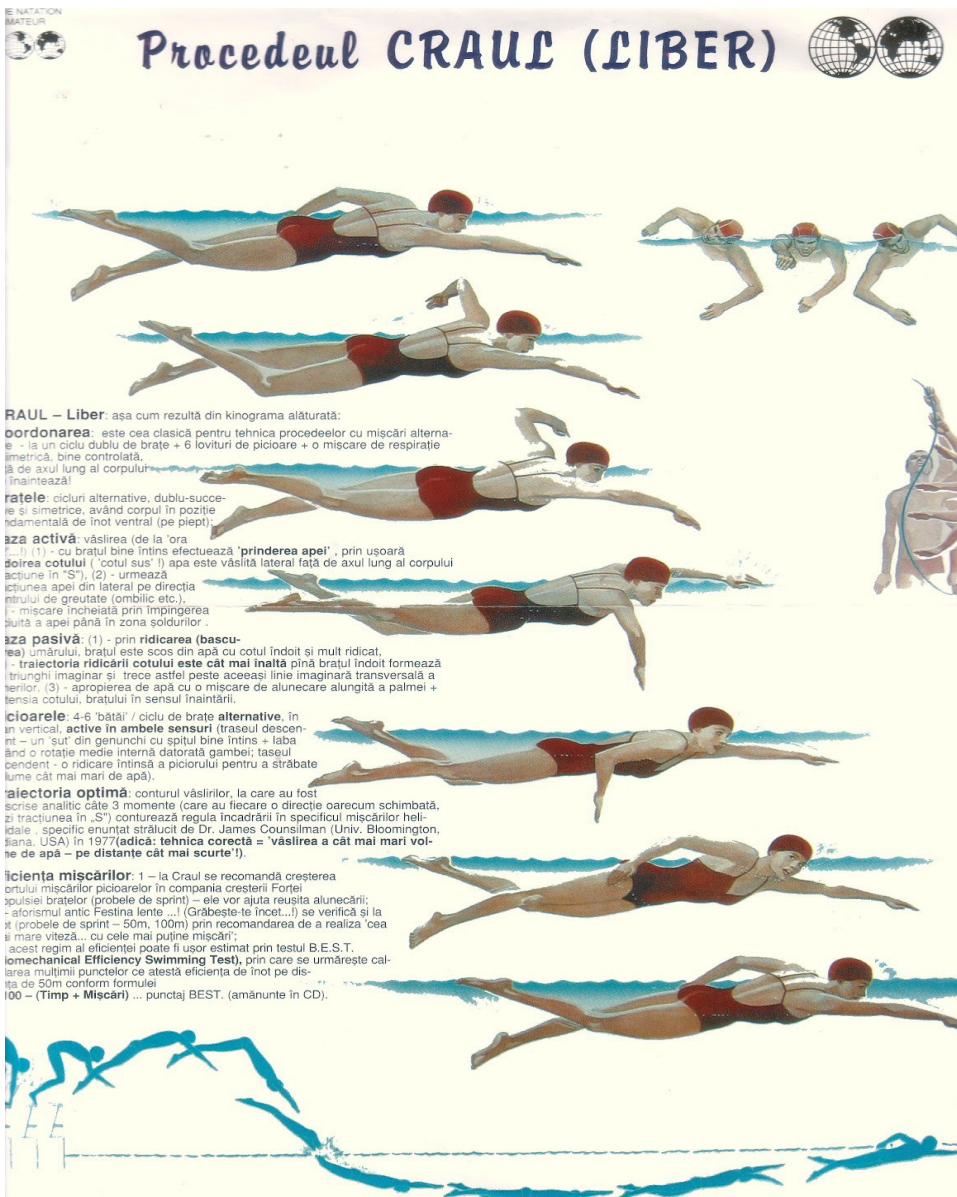


Figure 9 Proper technique for swimming sports swim crawl process Romanian Federation of Swimming

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