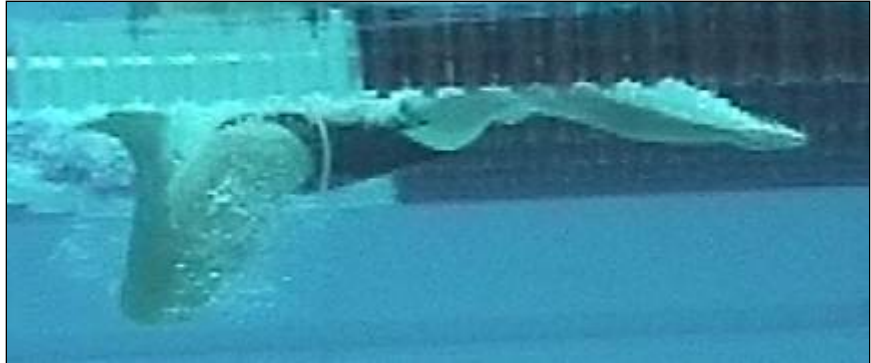




MODEL OF BREASTSTROKE SWIMMING TECHNIQUE

NAMES OF PHASES :

1. Leg kick phase
2. Gliding phase
3. Arm pull phase
4. Elbows bringing together phase
5. Arm recovery & leg flexion phase



FULL STROKE CYCLE

AIM of movements High forward speed !

Limiting positions beginning at the start of the leg kick
ending at the start of the next leg kick



General cognitive assignments:

Avoid unnecessary movements during all phases

Move forward as much as possible during kick and stroke

Optimum alterations of action and relaxation of muscles during kicking , pulling and recovery

Increase propulsive forces by leg kick and arm pull

Make kick impulsive at the very beginning, sticking to water, and armstroke soft from beginning with acceleration at the end, with good water feeling

Decrease resistance of the body at all times. Make recovery action of arms and legs with good streamlined positions

Ensure rigid transfer of power to the body from kick and pull through locked joints in correct timing

Realise aims of movements in each phase but also prepare for the movements in following phase

Co-ordinate good breathing actions with movements as follows:

Hold the breath with leg kick, exhaling during arm pull, inhaling when bringing arms together and recovery actions

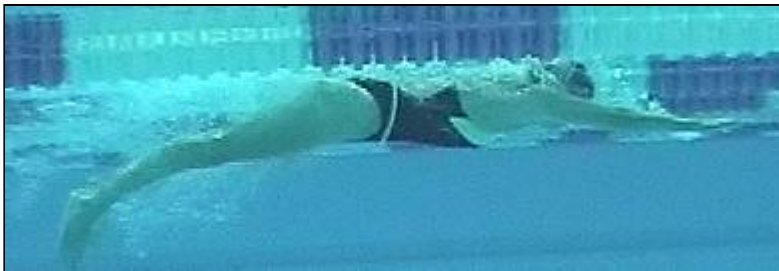
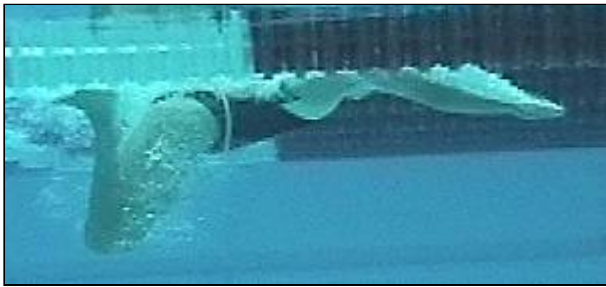
PHASES:

1. LEG KICK PHASE

AIM of movements Try to increase forward speed !



Limiting positions beginning: from the start of the leg kick
 ending: at the end of the leg kick



Parameters:

Forward speed during legs kick: 1.3 - 1.6 (m/sec)
 (High speed during kick shows efficiency of leg kick)
 Backward slip of feet during legs kick -0.16 - +0.07 (m)
 (Slip parameter is horizontal movement of feet back during kick, related to water. If slip is negative, it means that swimmer have relatively "empty" kick. Extremely good is positive slip. It means that during kick feet sticks to water so well that at th

Requirements for self control:

At the beginning of leg kick the arms must be stretched forward
 At the beginning of kick the shins must be vertical, knees widely separated and a good hip angle
 Back must be fixed, straight, rigid and horizontal
 The body must move straight, gliding and surfing with the head between the arms
 The feet must stick to the water, without slipping through

2. GLIDING PHASE





AIM of movements Try to maintain forward speed !

Limiting positions beginning: at the end of the leg kick
 ending: at the beginning of the arm pull

Parameters:

Forward speed during glide after kick: 1.3 - 1.8 (m/sec)

Glide speed indicate proper feeling of speed after kick. Low gliding speed is not rational, for following arm pull)

Duration of glide after kick 0.2 - 0.4 (sec)

(Higher gliding speed require longer duration, lower- shorter)

Requirements for self control:

Try to make the optimum glide duration after kick not too long

Avoid deep sinking during glide, keep body streamlined

3. ARM PULL PHASE

AIM of movements Try to increase forward speed !

Limiting positions beginning: at the start of the arm pull
 ending: at the end of the arm pull



Parameters:

Forward speed during arms pull: 1.4 - 1.77 (m/sec)

(Indicate efficiency of arms pulling action)

Hands slip forward-backward during pull 0.01 - 0.20 (m)

(Shows rationality and feeling of that pull. Negative value indicate breaking water feeling, positive is very good and let make longer stoke length)

Requirements for self control:

The legs during the first part of the arm pull must rise up quickly to horizontal position

Body must be horizontal, moving on the stroke

The arms must make a wide pull, with good catch, hands turned out, high elbows

The length of the pull must be relatively long , until hands reach the shoulder line

The hands must glide forward during the pull not slipping backward

4. ELBOWS BRINGING TOGETHER PHASE

AIM of movements Try to create maximum forward speed !

Limiting positions beginning: at the end of the arm pull
 ending: at the start of the arms recovery





Parameters:

Forward speed during elbows bringing together phase : 1.8 - 2.5 (m/sec)
(Must be max high value during all stroke cycle. Indicate right deviation of power of arms pull)

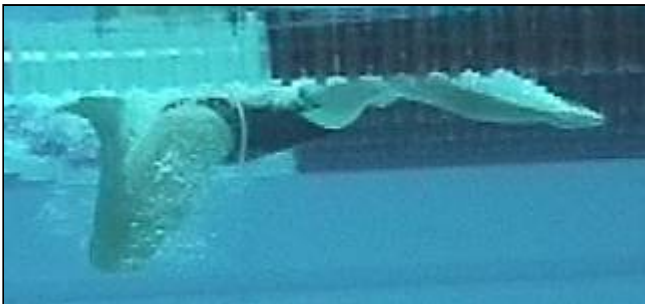
Requirements for self control:

The elbows and hands must move together with acceleration making stroke
Body must move ahead on the arms covering stroke, not rising too high

5. ARMS RECOVERY & LEGS FLEXION PHASE

AIM of movements: Try to not lose too much forward speed !

Limiting positions	beginning:	from the start of the arm recovery
	ending:	at the start of the next leg kick



Parameters:

Forward speed during recovery actions: 0,5 - 0,9 (m/sec)
(Shows good streamlining during recovery movements with arms and legs. Need to compare with previous speed of body during "elbows bringing together phase" Bigger difference shows less economical variant of technique)
Duration of recovery actions: 0,16 - 0,30 (sec)
(Longer duration shows that swimmer speed is longer time too low)

Requirements for self control:

The timing of stretching of arms and final flexing of legs must be done quickly ,without the body dropping before new kick
Arms must recover and glide forward on surface with elbows always remaining under water
Legs must bend with knees first, wide position, then from hips at the very end before the start of the next kick



