MODEL OF FREESTYLE START TECHNIQUE

NAMES OF PERIODS & PHASES:

Push-off and flight period
1. Reaction & preflexion phase
2. Pushing phase
3. Flight phase

Gliding period
4. Entry & gliding phase
5. Underwater kicking phase

Pullout period
6. Pullout phase
7. Swimming after start

AIM of movements High speed for the beginning of the race!

Limiting positions	beginning:	with the start signal
	ending:	at the end of the start actions

General cognitive assignments:
Avoid unnecessary movements during all phases
Prepare for start, follow orders of starter, take starting position and be ready for signal
Keep muscles relaxed during gliding and kicking
Decrease resistance during entry, gliding and kicking
Increase propulsive forces during push-off, kicking and pullout
Ensure correct timing of fixing joints for transfer of power during push, kicks and pullout
Inhale after push-off and begin breathing after start actions are done
Realise aims of movements in each phase but also prepare for the movements in following phase

PHASES:

1. REACTION & PREFLEXION PHASE

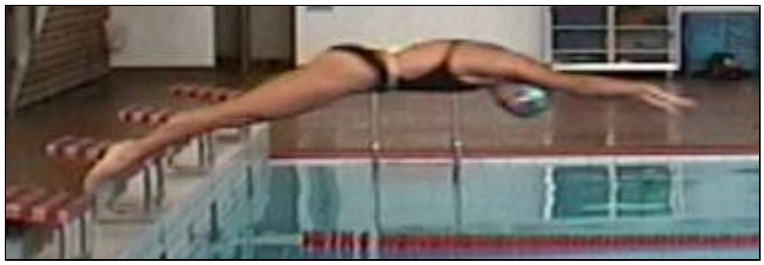
AIM of movements Try to minimise duration !

Limiting positions beginning: at the starting signal
ending: at the start of legs push

Parameters:
Duration of reaction with preflexion: 0.50- 0.60 (sec)
(This parameter indicate time necessary to prepare and begin pushing action.
Parameter indicate not only reaction to signal, but also time spent to all preparation movements before beginning pushing actions. It is easier to reduce that duration, then pushing time)

Requirements for self control:
Take good body position. Grab position, head relaxed down, on very edge of front of the starting block (or if using "track" start try to locate centre of gravity equally for both legs)
Be relaxed before starting signal
React to the starting signal as quickly as possible
React first from hip movement forward
Avoid deep preflexion of knees

2.PUSHING PHASE



AIM of movements Try to create maximum pushing power !

Limiting positions beginning: at the start of legs push
ending: when the feet leave the block

Parameters:
Duration of pushing action : 0.20 - 0.12 (sec)
(It indicates pushing power, as well explosive form of push)
Forward speed of head during push: 4.0 - 5.0 (m/sec)
(Head speed forward indicate that not only pushing by legs, but also body and head need to move fast forward to take fly-position)

Requirements for self control:
Transfer impulsive pushing forces in horizontal direction
Arms must be brought forward straight , without swinging, as quickly as possible
Head must move forward with high speed
Body angle at the end of push , must be nearly horizontal
The duration of push must be short

3. FLIGHT PHASE

AIM of movements Try to create more flight speed !

Limiting positions	beginning:	when the feet leave the block
	ending:	when the head enters the water

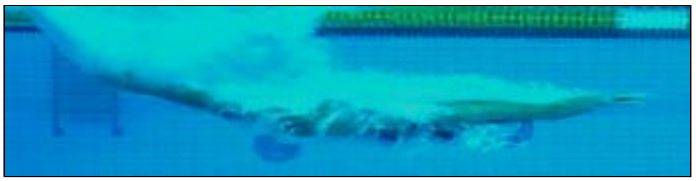
Parameters:
Forward speed of body during flight : 4.0 - 5.0 (m/sec)
(This is main parameter of successful flight, high flight speed is precondition for good start)
The length of head entry : 2.5 - 3.0 (m)
(Arms usually enter further then head, but if head enter after arms to the same length follow very successful entry of all body)

Requirements for self control:
Keep hips in very high position during flight
Rise legs up before entry
Make preflexion from knees before entry
Hide head between arms before entry
Keep high flight speed

4. ENTRY & GLIDE PHASE

AIM of movements Try to increase entry speed !

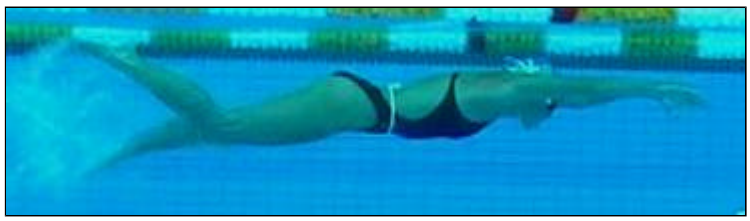
Limiting positions	beginning:	when the head enters the water
	ending:	at the start of the first leg kick


Parameters:
Forward speed of hands during entry : 4,5 - 5,0 (m/sec)
(High entry speed shows swimmer quality of streamlining and will guarantee continuous high speed for following gliding)
Forward speed of body after entry : 3.0 - 4.0 (m/sec)
(This parameter shows also swimmer hydrodynamic streamline qualities and timing of the first leg kick actions)

Requirements for self control:
Keep head , body and legs position very streamlined, without splashing into water
Make an immediate small dolphin leg kick during entry
Avoid feet sinking too deep after entry
Do not lose forward speed immediately after entry

5. UNDERWATER KICKING PHASE

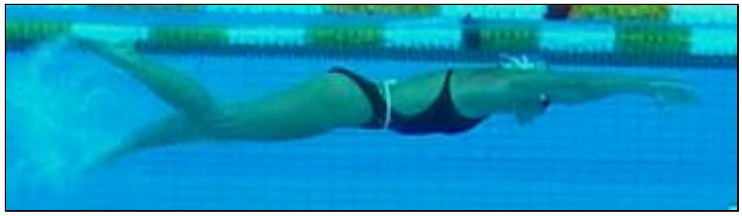
AIM of movements Try to not lose forward speed !

Limiting positions	beginning:	at the start of the first leg kick
	ending:	at the first arm stroke begin

Parameters:
Forward speed during leg kicks : 1.8 - 2.3 (m/sec)
(Efficiency of underwater undulation movements and leg kicks)
Duration of gliding with leg kicks : 1,2 - 3,1 (sec)
(If speed is high, then duration may be longer ,if low then shorter)

Requirements for self control:
Leg action after entry must be with undulating movements, correct force transfer and rhythm
During leg kicks keep head between stretched arms
Count optimum number of underwater leg kicks and make them with smaller amplitude at the beginning and bigger at the end
Feel for the best duration of underwater leg kicks to maintain high forward speed
Use only effective dolphin leg kicks instead of flutter kicks
Decide about length of underwater part according to FINA rules 15m !

6. PULLOUT PHASE



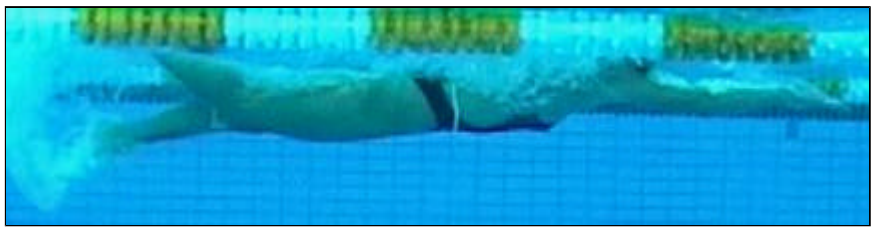
AIM of movements Try to increase pullout speed !

Limiting positions	beginning:	at the start of the first pullout stroke
	ending:	at the end of the second pullout stroke

Parameters:
Forward speed during first stroke : 1.7 - 2.0 (m/sec)
(Parameter indicate efficiency of that first pull)
Forward speed during second stroke : 1.7 - 2.0 (m/sec)
(Parameter indicate efficiency of that second pull)

Requirements for self control:
Timing the beginning of first pullout stroke must be in time, at the end of the last leg kick and optimum depth of the body not too deep
Simultaneously with the beginning of first arm pull switch over to flutter leg kicks, so that catch of right arm pull is co-ordinated with the left leg kick or vice versa
Make first arm pull with extreme stretching forward of other arm
Body must be rising to the surface at the end of the first arm pull
Timing of the beginning of second arm pull must be in time, at the end of first arm push, not too late, avoid extra gliding between strokes
The action of both arm strokes during pullout must be with good acceleration, high elbow positions
Avoid breathing actions during pullout strokes, and keep body position flat
Make pullout through "one hole" on water surface, head first

7. SWIMMING AFTER START



AIM of movements Try to maintain high speed !

Limiting positions	beginning:	at the beginning of the next stroke after start
	ending:	at the end of the next stroke (one cycle)

Parameters:
Speed of the swimming cycle after start : 1.7 - 2.0 (m/sec)

(High speed indicate good swimming technique after start movements and must be compared with pullout cycles speed before it)

Requirements for self control:
Decide about the first breathing actions
Start your normal rhythm of swimming with swimming speed according to your individual tactical plan of the race

THE WORLD BEST START, TURN, FINISHING AND SWIMMING TIMES & SPEEDS

Women	FREESTYLE			
distance	start 15m	swims	turns 15m	finish 5m
50m	Jingyi	Jingyi		Thompson
	24,51	22,06		25,61
sec	6,34			2,38
m/sec	2,37	1,93		1,89
100m	Jingyi	v.Dyken	Jingyi	Ying Shan
	54,01	55,11	54,5	55,1
sec	6,54		7,7	2,59
m/sec	2,29	1,79	1,95	1,74
200m	Lu Bin	v.Almsick	Lu Bin	v.Almsick
	1.56.89	1.56.78	1.56.89	1.57.71
sec	6,82		8,39	2,67
m/sec	2,2	1,66	1,79	1,69
400m	v.Almsick	Bennet	Geurts	Aihua
	04.08.37	04.07.07	04.10.06	04.09.64
sec	7,18		8,69	2,8
m/sec	2,09	1,59	1,73	1,61
1500m	Geurts	Bennet	Geurts	Stockbauer
	8.40.08	8.27.89	8.36.14	8.33.79
sec	7,28		8,89	2,6
m/sec	2,06	1,53	1,69	1,67

TOP OF THE PAGE | MAIN PAGE