

START ANALYSIS

POINTS FOR FUTURE DISCUSSION...

The following is a selection of pictures highlighting significant differences / similarities in the competitive start of 3 elite female breaststroke swimmers. My comments are intended to prompt discussion on positive ways forward in developing faster start times to 15m.

Comparison 1: Stance & Initial Movement

Ruta Meilutyte



Grip shoulder width & very strong
Front leg quite straight
Back foot very high
Head fully over block edge
Front leg loaded



Significant flexion of front leg – occurs VERY quickly
Pull appears to shift body weight forward VERY quickly
Hands are still on block when hips at highest point
Back leg far more extended than other examples in picture

Rikke Pedersen



Grip narrower & strong
Front leg very straight (good glute flexibility?)
Back foot high
Head over block edge but chest further back than Ruta
Loaded evenly on front & back leg?

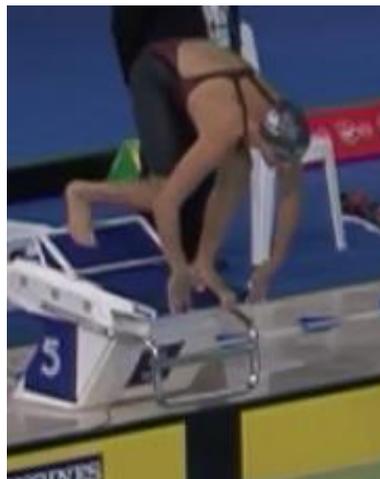


Front leg flexes but does not move forward like Ruta's?
Arms flex at elbow during pull whereas Ruta's are relatively straight
Rikke's pull does not shift her hips forward as much as Ruta's
Rikke's back heel is still flat – whereas Ruta's changes from flat to elevated

Molly Renshaw



Grip too wide?
Drives off left front leg and appears very straight
Lead leg is far wider on block than RM & RP?
Back foot very high
Head over block edge and chest appears further forward than Rikke's
Front leg loaded?



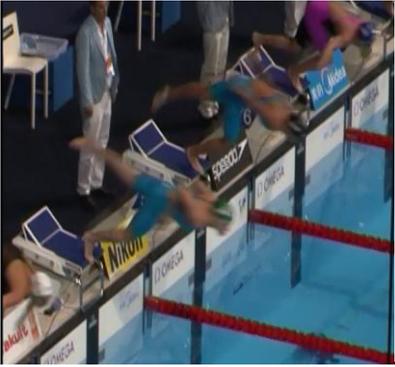
Front leg does not really flex?
Front leg is pushing down into block rather than back into block
Arms flex at elbow but there is there a pull? Molly seems to just 'let go'?
Molly's chest & hips really have not much at all compared to RM & RP?
Molly's back leg is far more flexed at this stage compared to RM & RP

Key Points to discuss:

- Flexion speed of front leg
- Grip position
- Front leg position – wide or central?
- Grip release point & where the hips should be
- Focus of leg drive – front / back? Angle of drive?

Comparison 2: Drive Off Block

Ruta Meilutyte



Elbows drive back & up aggressively
Only point in start where Ruta looks forward
Back leg kicks back & up very fast
Front is already almost at full extension compared to other examples which all are still very much flexed



Forearms & hands move forward up & underneath chest
Returns to looking down
Back leg continues upwards ending with a huge gap between front & back legs
Front leg has left the block well before any other swimmer

Rikke Pedersen



Rikke's elbows flare out and forearms travel forward
Rikke looks forward but head is above spinline
At the drive point Rikke's hip is not as extended as Ruta
Back leg does not drive up anywhere near as fast as Ruta



Arms extended and pointing down
Returns to looking down
Highest point of back leg reaches spinline
Rikke has a nice position here but it appears to be a slightly lower level than Ruta? (I.e. Ruta is travelling up / higher as she drives off the block?)

Molly Renshaw



Molly's elbows flare out then arms move fully extended in front of shoulders
Molly looks forward as with RM & RP
At the drive point it does seem Molly's front leg & hip shape does not show the explosive potential of the others – but I'm not sure how to explain this?
Back leg does not drive up anywhere near as fast as Ruta



Arms extended and pointing forward – too flat?
Molly is looking like RM & RP
Highest point of back leg just reaches spinline but gap between front and back leg is significantly smaller than RM & RP?
Molly has a lower position driving off the block than RM & RP – is this due to less explosive power off the block?

Key Points to discuss:

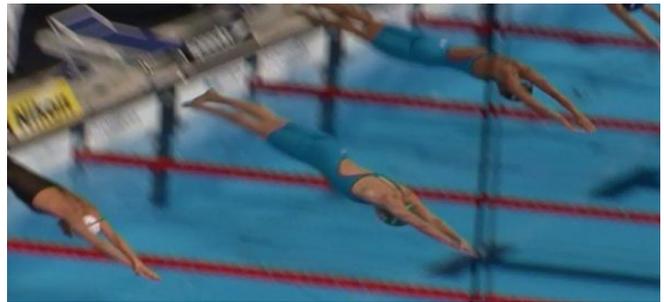
Elbows – up & back OR out & forward?
Speed & Height of back leg drive
Gap between front and back leg when leaving the block
Arm position when leaving the block
Drive point shape – whole body & hips

Comparison 3: Flight

Ruta Meilutyte



Arms continue forward under torso. Hands still point down
Still looking directly down
Flight position appears higher than other e.g.s in photo
As front leg lifts & rear leg lowers towards streamline we can see Ruta has almost a back arch as she powers towards her tightest entry line



The body from fingers to toes could not be any more streamlined
Still looking directly down
Although very straight, Ruta's angle of entry appears quite steep
There is a very minimal pike position at the hips in preparation to enter the water

Rikke Pedersen



Arms continue forward & extended under torso. Hands still point down
Still looking directly down
Flight line (especially upper body) is completely straight (spine through to lead leg toes). It is also higher than other egs in photo



The body (fingers to toes) is streamlined but not to standard of Ruta
Still looking directly down
Like Ruta, Rikke's angle of entry appears quite steep
Again there is a very minimal pike position at the hips in preparation to enter the water



Arms remain forward & extended in front of shoulders. Hands still point forward
Starting to look backwards creating slight curve of upper spine
Flight line appears level with the block compared to RM & RP whose lines appear above block level (greater leg drive?)



The body (fingers to toes) looks well streamlined, however, the line drawn from finger to toes is rather curved. Certainly compared to the line Ruta achieves.
I believe this is caused by Molly's head now completely beneath her arms looking backwards. RM & RP head positions are more between their biceps
Dues to the lower flight level, Molly angle of body entry is more flat than steep

Key Points to discuss:

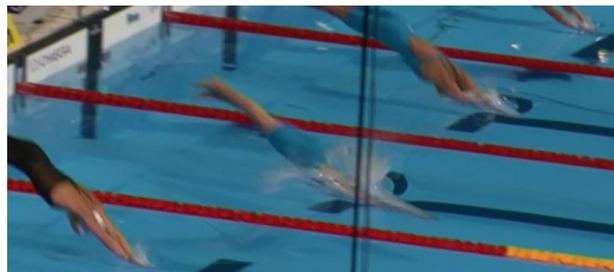
- Arms position during flight
- Flight level
- Direction to look
- Head position on entry
- Angle of entry
- How streamlined the body should be as hands connect with the water

Comparison 4: Entry

Ruta Meilutyte



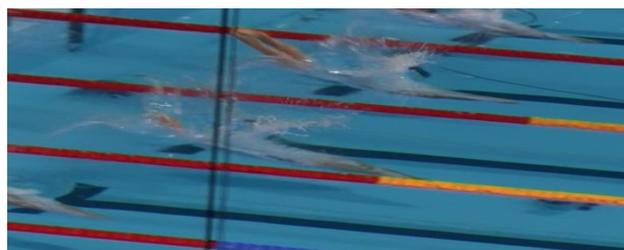
Upper torso appears to be locked straight & diagonally down
Hips have evident pike
This probably means Ruta's legs can be sucked in through the entry hole with less drag



Appears the hips begin to extend as hips reach the water
This extension occurs as Ruta begins to search for more horizontal streamline travel with her arms & upper body?



Ruta's body does enter through the hole 'bit by bit' which appears quite drag efficient
The arms and torso are still searching for deep water



Ruta's lower body enters hips then upper leg then lower leg & finally feet
Horizontal streamline achieved as feet submerge preventing the shins crashing to the water

Molly Renshaw



The head looks back rather than down thus making it more difficult to control direction – it is more the head position of a tumble turn
The body is almost straight with little pike



It appears Molly's legs are at a flatter angle compared to Ruta's
This normally means more of the legs will hit the water at once thus creating more drag



The flatter flight travel causes a greater surface area of each part of the leg to connect with the water at once
In the picture to the left most of the thigh reaches the water at the same time
Molly's already seems to have reached horizontal streamline as the hips reach the water



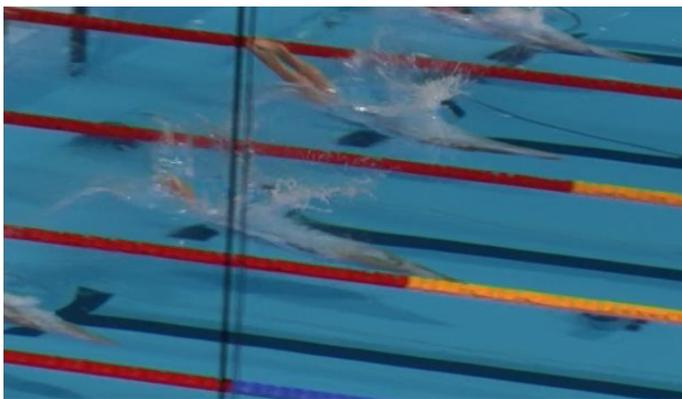
In the picture to the right most of the shin reach the water at the same time – the entry hole expands which means the drag has increased
The horizontal streamline means the arms have lifted upwards underwater. Simple understanding of a 'see-saw' effect would suggest this will pull the legs downwards

Key Points to discuss:

Development of a greater 'pike' entry position
Head position looking more down than back
Angle of underwater direction
What point horizontal streamline is reached?
Depth

Underwater Phase

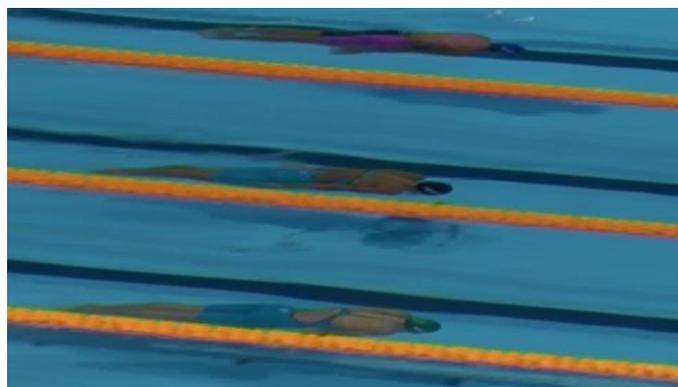
Ruta Meilutyte



Ruta's angle of entry is far steeper than the other examples in the photo meaning she is finding deeper water

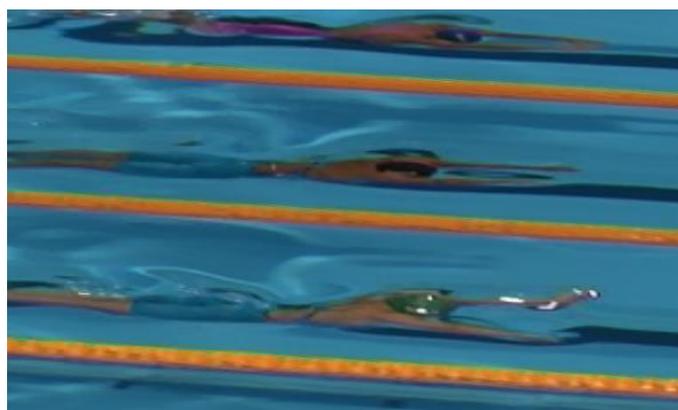
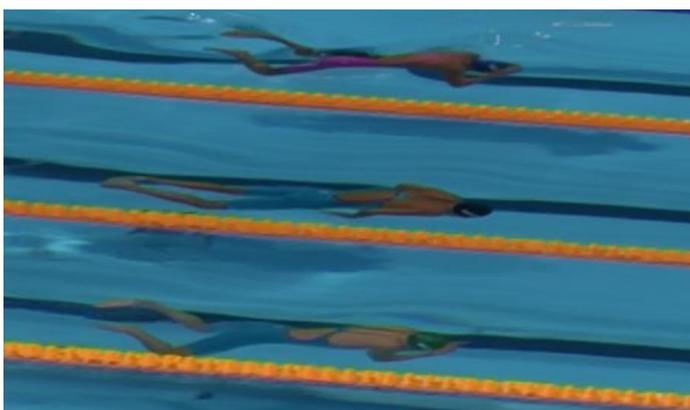
I believe Molly's angle of entry is more like the example above Ruta where this swimmer finds horizontal streamline as the hips reach the water

It does appear this swimmers shins create a parachute hole in the picture to the right – somewhat how Molly's can look like



It seems Ruta has achieved good depth as she initiates her pull down

ALL OF A SUDDEN SHE IS CLOSER TO THE SURFACE THAN ANYOTHER SWIMMER (in same shape) – Ruta's pull down appears to have massive uplift



Hands & elbows travel tightly underneath body

Ruta reaches the surface in perfect line initiating the outswEEP at exactly the same time the head is about to break the surface

Key Points to discuss:

Angle of entry and when to find horizontal streamline

The concept of 'diving deep' and 'pulling up' – this is a technique I believe is used well by some Japanese swimmers

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