



# Racewalk Technique

## *The Stride Cycle*

Before we begin this analysis it makes good sense to state the purpose and objectives of the event. By doing this we will have a set of criteria available to us where we can gauge how effectively the technique assists in achieving the objectives.

**Purpose** – to travel over the prescribed distance in the shortest possible time

**Elements** – form based rules, endurance, environmental conditions

**Methods** – putting perfect posture into motion, maintaining a high motion to energy consumption ratio, core strength utilisation

Traditionally the analysis of the race walk stride cycle begins with the stationary position of the start. However, as this position is only taken once over any given race walk event of any distance the start position is irrelevant to any functional analysis. The stride cycle is a continuous flow and to analyse that flow we start our analysis with the stride in process.

A stride cycle represents the full movement path of the athlete on one side of the body. A complete stride consists of two stride cycles. As with any movement pattern where the feet are in contact with the ground the effective movement begins at the point of contact.

The stride cycle can be seen to be made up of three distinct phases;

- the ***Drive Phase*** where all of the power is generated and applied to the ground,
- the ***Support Phase*** where the length of the stride is generated, and
- the ***Recovery Phase*** where all systems are brought back to a neutral position in preparation for another cycle on the other side of the body.

To prepare this analysis photo clips from video taken at the 2008 IAAF World Junior Championships have been used. The event represented is the 10,000m Women's Race Walk. The athletes in the photos are the ultimate 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> place finishers and represent the pinnacle of race walk technique at the Junior level. Notice that even though the athletes depicted are among the best the world has to offer, each has individualised the general technique based on the individual physical characteristics of the athlete.

The athletes in this photo series deserve some recognition. They are, from the right to the left in the photo below: Tatyana Mineeva, Russia, in the middle is Elmira Alembekova, Russia, and on the left is Yanfei Li, China. The order of the athletes in this photo series is in the order of their finish in the race from the right to the left.

## The Drive Phase



On the left Li is just completing the recovery phase of a stride cycle. The right foot is fully in contact with the ground and has completely stopped its movement in preparation for the cycle about to begin. The right leg is perfectly straight in order to conform to the rules. Notice how the leg is angled back as the momentum of the body created by the previous stride carries her body over her foot. Her left knee is driving forward bringing the left foot through the stride low to the ground. At this stage the hips and shoulders are in a neutral position perpendicular to the track and the arms are at their natural neutral position as well.

Alembekova, in the middle, has just entered the push phase of the stride cycle. The foot is still in a stationary position but her body momentum has carried her upper body past the foot allowing the right leg calf, hamstring and glute muscles to engage initiating the forward push. The left leg continues to drive forward travelling parallel to the ground allowing the leg below the knee to swing freely, keeping the left toe as close to the ground as possible. The hips are still perpendicular to the track but the upper body has begun its rotation with the right shoulder being moved forward as a result of the arm drive back on the left side.

Mineeva is now at the point in her stride where the right foot once again becomes mobile. The heel has lifted off the ground, allowing the full length of the leg to be used as a lever to pivot on the ankle and apply maximum force to the portion of the foot in contact with the ground. The upper quads and hip flexors are now recruited into the stride. The abdominals are now beginning to engage as the upper body continues to rotate the right shoulder in the direction of the stride. The right arm remains parallel to the ground, minimising the energy required to move it through space.

Notice the straight line between the right foot and the right ear passing through the hip.

## ***The Support Phase***



Li continues to rise up on the toe using the full effect of the leg lever to drive her forward. The left foot nearly brushes the ground as it comes to the forward position. The abdominals are now fully engaged as the left shoulder continues its rotation back allowing complete leg and hip extension on the right side. The right arm remains parallel to the ground.

As Alembekova moves more fully to the support phase only the toe remains in contact with the ground extracting the last bit of energy from the action of the leg and applying that force to the ground. The left leg has moved very near to its final position before making contact with the ground. The torso has moved toward the forward third of the stride. The shoulders have rotated to their maximum extent in preparation for the recoil that will drive the left hip forward in order to extend the stride to its maximal length.

In full support position Mineeva has just passed the point where her right foot has completely left the ground. The major muscles of the right leg immediately begin their contraction causing the leg to bend at the knee in preparation for the forward portion of the leg motion. The left leg has completely straightened with the heel in position for initial contact and the foot perpendicular to the leg. The forward leg drive combined with the opposing torso rotation has allowed the left hip to be brought forward extending the length of the stride. Right arm remains parallel to the ground with the left arm coming back as far as possible.

Notice that the line linking the ankle to the ear through the hip is no longer straight in this phase.

## Recovery Phase



As the right leg of Li moves forward the leg continues to bend at the knee to provide clearance for the foot as it comes through. The right hip is driven forward using the glutes and the abdominals. The right arm begins its drive rearward allowing the left shoulder to move back toward a perpendicular position to the track. The right arm remains parallel to the ground.

At the halfway point of the recovery phase of the stride Alembekova begins to look relaxed with the left foot firmly on the ground and the right leg at the mid position, toe close to the ground. Hips and shoulders have resumed a position perpendicular to the track. Abdominals are fully disengaged and the arm has dropped slightly from its parallel position with the hand pointing toward the ground.

Just past the fully neutral position Mineeva looks very relaxed with the left foot planted on the ground, the right knee moving past the left leg and the right toe nearly touching the ground. Upper body is fully neutral with the arms nearly straight, shoulders dropped and posture alignment regained.

The right side stride cycle is now complete and the body is prepared for the left side cycle. As complex as this process is in terms of muscle recruitment, alignment, power development and recovery these athletes will complete in the neighbourhood of 210 to 215 of these cycles per minute or 3.5 per second for their entire event distance and therein lies the challenge of this event!