

## RACE WALKING TECHNIQUE –AN OVERVIEW

**Dalveer Singh Kaunteya, Ph. D.**

*Assistant professor, KR PG College Mathura (U.P)*



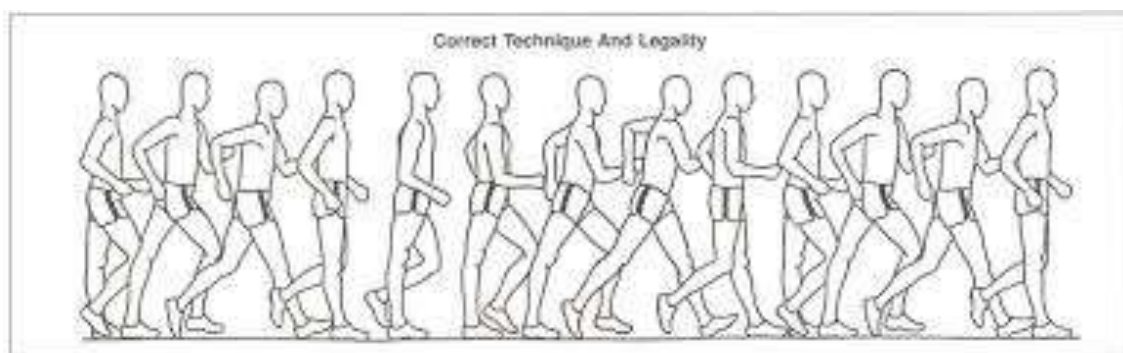
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### WHAT IS RACE WALKING

Race Walking is a progression of steps so taken that the walker makes contact with the ground, so that no visible (to the human eye) loss of contact occurs. The advancing leg shall be straightened, (i.e. not bent at the knee) from the moment of first contact with the ground until the vertical upright position.

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Note : The Double Support Phase – the heel of the advancing foot strikes the ground , when the toe of the trailing foot has not yet left the ground. If this doesn't occur in each stride , the athlete is not complying with the “contact” rule



*Note the heel-and-toe contact during the widest spread of the stride, and the straight leg as the heel contacts the ground.*

## HEAD AND POSTURE

□ Head level, eyes looking approximately 20 metres in front of the body. □ Relax, avoid tension in the neck. The jaw should also remain relaxed.



## LEGS AND STRIDE

□ The knee of the advancing leg must be straightened when the advancing foot makes contact with the ground. □ Bring the knee through low when the advancing leg swings forward, avoid a cycling motion which has a high knee action, this results in a loss of contact.

□ Move legs slowly at first, then gradually increase leg speed (cadence). □ The better way to achieve a faster pace is to increase leg speed, not over-striding. Maintain the natural stride length for your body and increase the number of strides per minute. Gradually work towards achieving 160 steps per minute. Over time, you may reach 180-200 SPM. However, initially your stride length may shorten as the cadence is increased.

Racewalking refers to a movement of feet of the walker when the walker progresses forward making constant contact with the ground, and no visible **loss of contact** occurs at any point of time for the judges. Ideally this walking technique is popularly known as “**heel-to-toe**” motion keeping the arm to shoulder motion low to ground



## HIP MOBILITY

□ Flex (rotate) pelvis forward and back horizontally. □ The Oblique (side abdominal) muscles are the primary flexors for this action. □ Avoid excessive lateral (side to side) hip motion as this can lead to an injury to the Gluteus Medius and Minimus (side of hip) muscles, additionally this shortens the stride length, which can slow the athlete down or results in a loss of contact. □ Driving the knees forward and towards the centerline of the body will help bring the pelvis around. Flex (rotate) pelvis forward and back horizontally.


### HOW TO RACE WALK COND'T

× **Hip Movement**

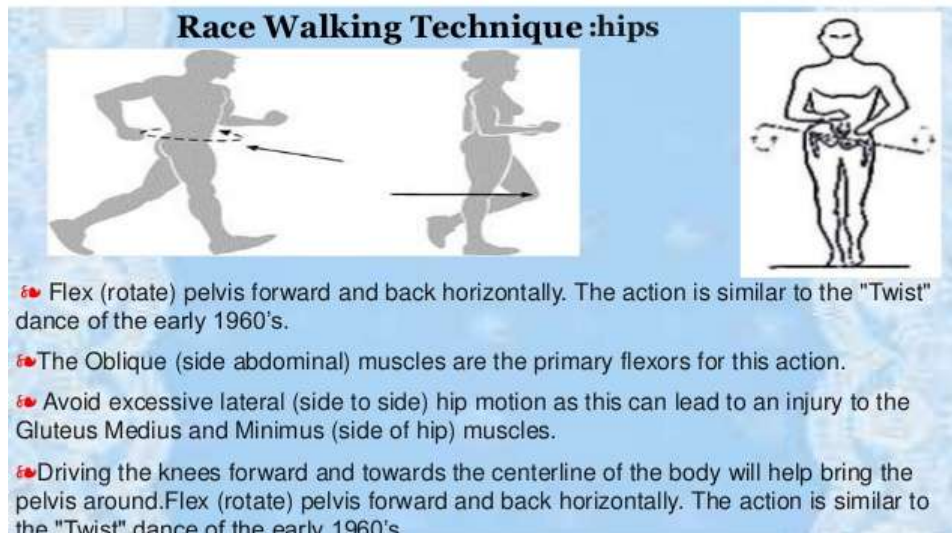
**Objective:** To rotate the hips in a manner which ensures proper foot placement and optimum stride length.

**Technical characteristics**

- × Lateral movement of the hips is visible but should not be exaggerated.
- × Hip flexibility is essential.



*Head should remain on same level*



Forward oscillation of the hips gives a significant increase in stride length – hence the need for excellent hip / joint mobility. It allows the lowering of the recovery leg hip , which shortens the leg pendulum and speeds it up .It also ensures that the swinging foot remains close to the ground . Therefore , if a greater rotation of the hips can be achieved , stride length ( up to 10cm ) can be increased without increasing stride rate .

However , there is an optimum stride length . At full stride , the angle between the legs reaches 45- 50 degrees , but this will vary considerably from walker to walker. An example of the gain of stride length by proper hip mobility : A Walker takes 80 strides per minute and her stride length is 1.20mtres . The distance that she covers is  $80 \times 1.2\text{m} = 96 \text{ mtres / minute}$ . If her hip mobility improves and increases her stride length by 10cm , then  $80 \times 1.3\text{m} = 104 \text{ mtres / min}$  . This is an example only , but quite valid reasoning and if this improved hip mobility is accompanied by an improvement of forces from the ankle

Plantar flexors and the shortening of the different racewalking phases and an increase in stride frequency , then an optimal combination of all of these factors will determine maximum speed.

Put quite simply , - the athlete who is capable of maintaining the fastest leg frequency and optimal stride length – all other factors being equal – WILL WIN .  $\text{SPEED} = \text{SF} \times \text{SL}$  ( stride frequency x stride length )

### **ARM DRIVE AND SHOULDER ACTION**

The shoulders and arm action work together to absorb angular momentum( rotation ) created by the legs and hips and transmit it to the trunk .

So the shoulders can absorb rotation , they should be kept low and the muscles surrounding , relaxed . A slight shoulder dip will be produced and it must be just sufficient so as to

maintain the centre of gravity at a constant level. Too much dip produces excessive lateral sway of the hips .

The arms can be used rapidly if carried at approx 90degrees. – This action is the most efficient angle for fast , balanced , vigorous arm action . If the elbow angle reduces too much ( 80 -70 degrees) , then the shoulders will excessively roll or rotate . And the opposite applies – a low , pendulum –like arm swing will slow down leg speed. The range of the arm swing commences with the hand just forward of the hip seam and the elbow in a recovery position to the back .

The arm then swings forward , hand kept close to and just above the hip and reaches the end of the swing with the hand reaching just under chin height and to the centre of the body .

The arms must swing in a pendulum like attitude , driving forward and not going below the hip or behind the hip as this is energy being forced backward .

A correct arm action fulfills three important functions :

- 1. Balances the whole body / racing action .**
- 2. Maintains a horizontal forward hip action and rotation**
- 3. Affects ground reaction and increases the rear legs driving force .**

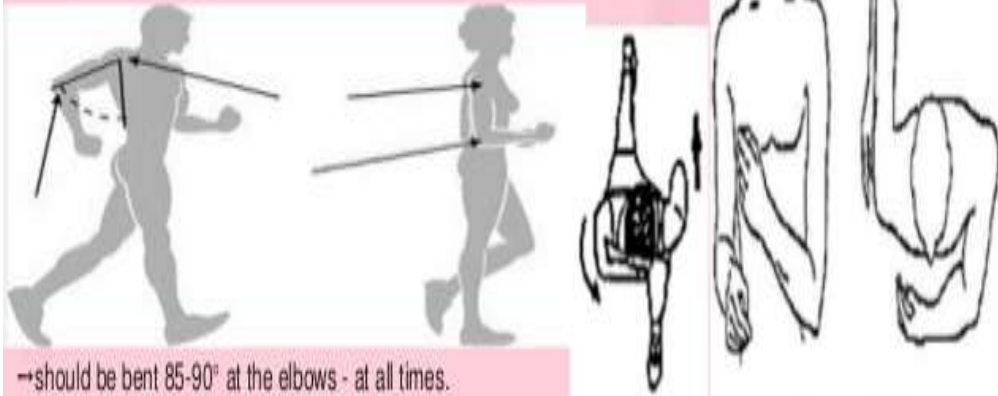
The need for a strong upper body and strength endurance of the arm action will ensure that a vigorous arm action is maintained throughout any race and is an essential component of any training program for racewalking. There is also the term that I refer to as “Walking on your arms” . When an athlete tires in a race usually , there arm actions slows accordingly . However , if there is then a greater emphasis and focus only on arm drive ( speed) , the legs usually follow suit and the athlete can and will speed up .

## **ARMS**

Arms should be bent 85-90° at the elbows - at all times.  Swing arms loosely and vigorously, pivoting from the shoulders.  Keep hands close to the body, heel of the hand brushing by the hip bone.  The hands should not cross the vertical nor horizontal midline of the torso.  At the completion of the forward swing, the upper arm should be parallel with the torso.



## Race Walking Technique: Arms



→should be bent 85-90° at the elbows - at all times.

→Keep hands close to the body, heel of the hand brushing by the hip bone. → Swing arms loosely and vigorously, pivoting from the shoulders.

→The hands should not cross the vertical nor horizontal midline of the torso.

→At the completion of the forward swing, the upper arm should be parallel with the torso. In the forward swing, the hands are not driven upward.

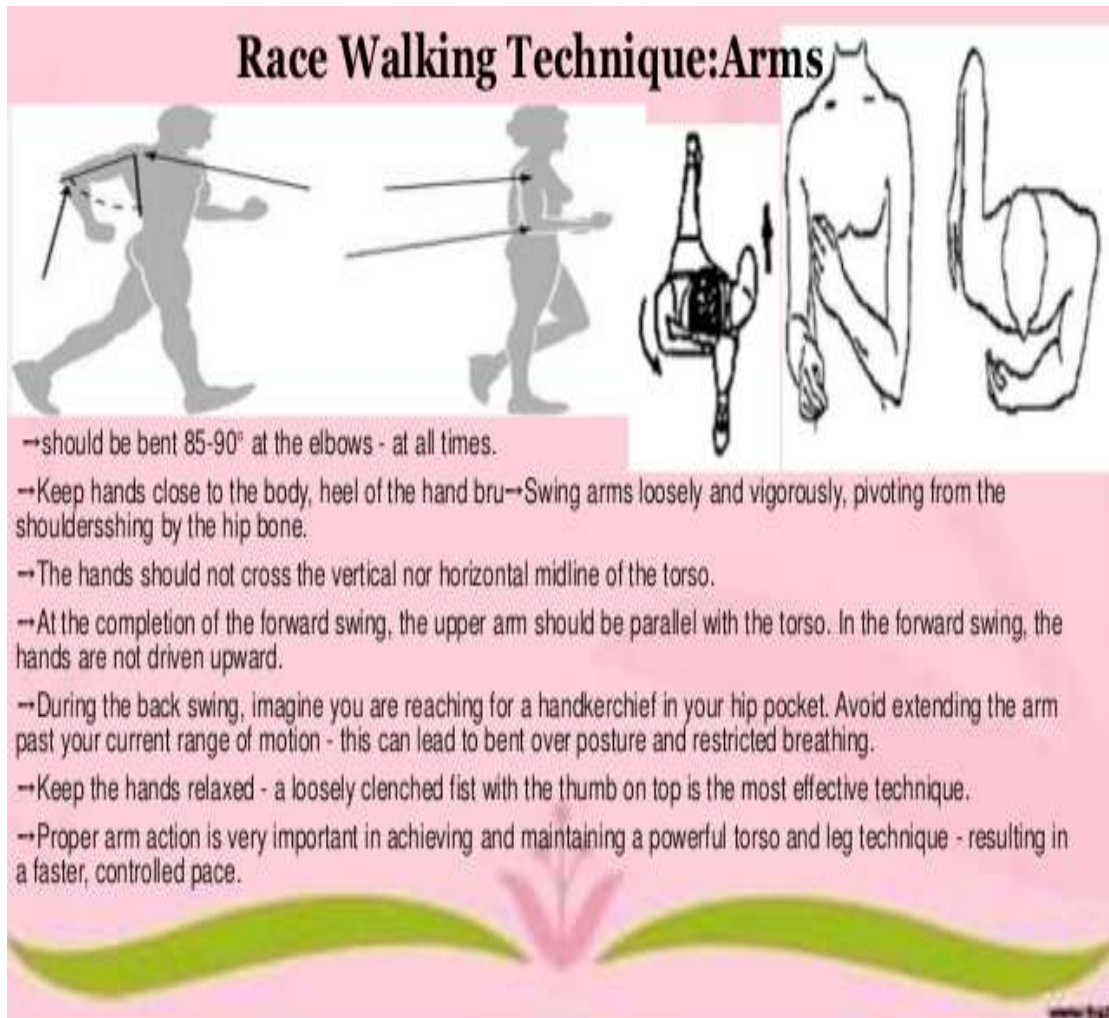
→During the back swing, imagine you are reaching for a handkerchief in your hip pocket. Avoid extending the arm past your current range of motion - this can lead to bent over posture and restricted breathing.

→Keep the hands relaxed - a loosely clenched fist with the thumb on top is the most effective technique.

→Proper arm action is very important in achieving and maintaining a powerful torso and leg technique - resulting in a faster, controlled pace.

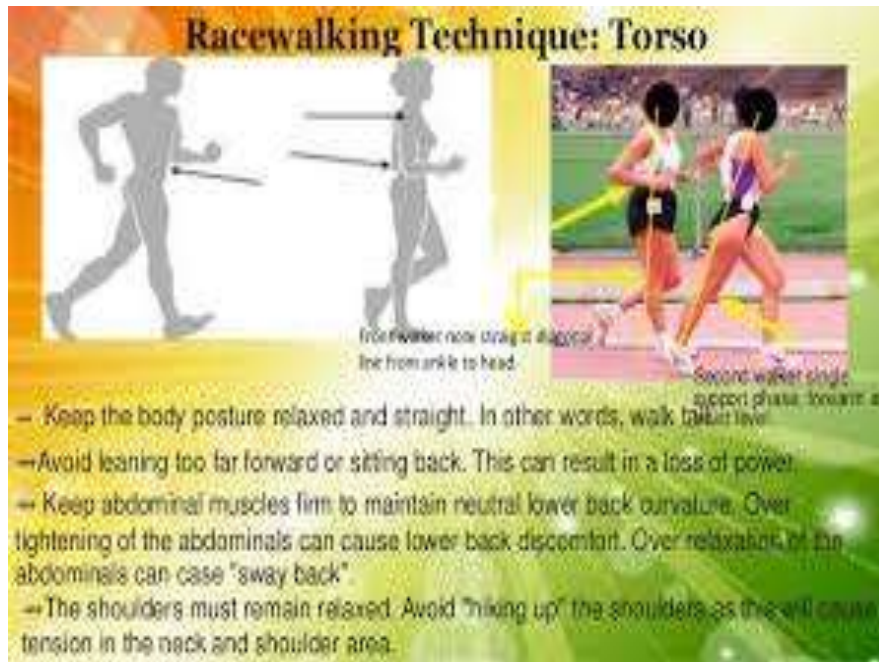


In the forward swing, the hands are not driven upward. □ During the back swing, imagine you are reaching for a handkerchief in your hip pocket. Avoid extending the arm past your current range of motion - this can lead to bent over posture and restricted breathing. □ Keep the hands relaxed - a loosely clenched fist with the thumb on top is the most effective technique. □ Proper arm action is very important in achieving and maintaining a powerful torso and leg technique - resulting in a faster, controlled pace.



## **TORSO**

□ Keep the body posture relaxed and straight. In other words, walk tall. □ Avoid leaning too far forward or sitting back. This can result in a loss of power. □ Keep abdominal muscles firm to maintain neutral lower back curvature. Over tightening of the abdominals can cause lower back discomfort. Over relaxation of the abdominals can cause "sway back". □ The shoulders must remain relaxed. Avoid "hiking up" the shoulders as this will cause tension in the neck and shoulder area and possible loss of contact



### **LEG DRIVE & FEET PLACEMENT**

The double support phase of a walkers stride occurs for only a fraction of a second . It should be the aim of every walker to reduce the time taken on this phase .

Contact occurs at the centre back of the heel first , with the toes as high as possible . This will ensure that the optimal stride length is attained. A flexed knee on contact will greatly reduce jarring and will give a smoother , faster , more efficient rolling action . The rear leg / foot will be in a push-off position high on the toe . To reduce a “propping ” effect , the heel is placed closer to the athletes projected centre of gravity . Also , to avoid any unnecessary vertical movements “ bouncing ” , the leg and the foot must not be dropped down short or jammed down to the track . The speed of the stride is directly related to the strength of the pushing force and to the direction of the rear foot . The major contribution to this force is made by the ankle plantar flexors during push-off.

The leg should remain braced throughout the majority of the driving phase , however the leg should not be braced until the front heel makes contact with the ground as this greatly reduces the speed of the recovery leg . During the recovery , the knee is bent at up to 90degrees to allow for a rapid recovery as it sweeps forward . The foot is kept low to the ground as this is happening . It is imperative that the leg is not straightened early during the latter stages of the forward swing to heel impact . A powerful hip rotation / action would prevent this from occurring .

Foot placement is critical and small changes can make a considerable difference to speed and stride length . Heel contact takes place along a straight line . The body weight is transferred



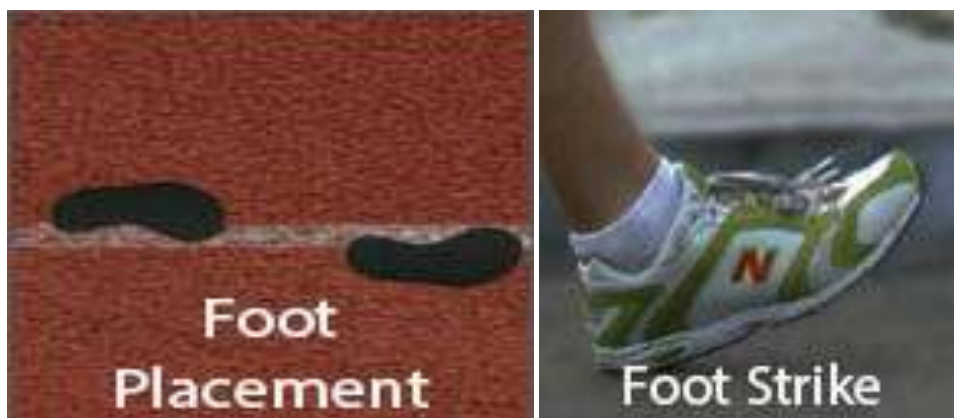
via the outer border of the foot ending at the big toe .As the foot rolls off the ground , it should swing forward as low as possible. Ideally , if an athlete were to imprint his stride , it would align itself along a centre line marginally to the left and right of that line with the big toe inline .

The use of X-Over technique is absolutely critical in ensuring that the lead leg lands in a straightened position , that the hips are rotated sufficiently and that there is sufficient rear leg drive along with the maximum stride length . Use of this technique in an over accentuated style will lead an athlete to utilizing all of these techniques when racing reducing the possibility of disqualification for contact ..

### **FEET**

□ One foot must constantly be in contact with the ground. The lead foot must make contact before the rear foot loses contact. □ Landing too far forward of the torso is overstriding and an inefficient technique that will slow the pace, cause "soft knee", and possibly lead to an injury of the Iliopsoas (groin) and Popliteal (behind the knee) muscles. On up hill terrain, the hamstrings and gluteal muscles can be injured by overstriding. □ Land on the heel, ankle flexed within your range of motion. Roll straight forward through the center of the forefoot and off the end of the toes. Be sure not to lift the toes when flexing the ankle - this can stress the tendons at the top of the ankle.

As the advancing foot has rolled off the toes, keep the ankle relaxed and the toes pointed towards the ground until past the supporting leg, at which time the ankle will begin to flex in preparation for the heel plant. □ Anterior Tibialis (shin) tightness, burning, or soreness may occur in the beginning, so take it easy until these muscles become conditioned.



### **RULES OF RACEWALKING**

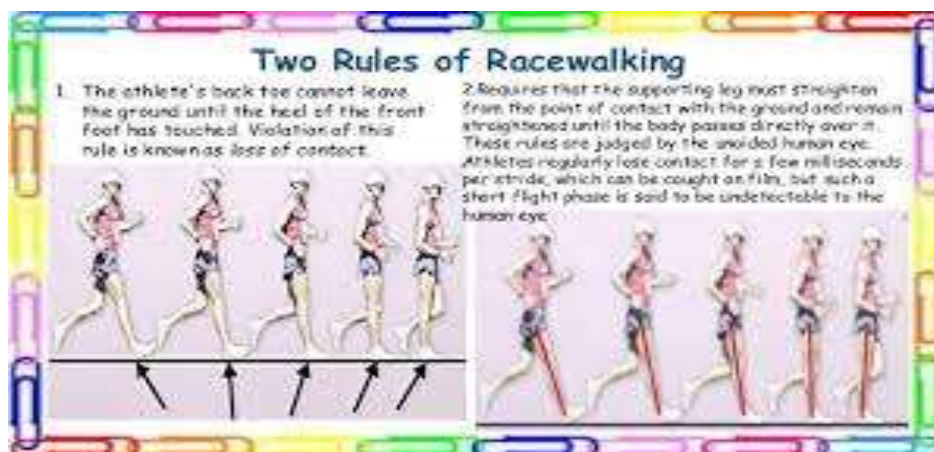
Race walking is a very tough disciplinary sport being physically monitored by multiple judges, yet the walkers are increasingly participating in the walking road events and

competitions. The rules are clearly defined by the IAAF (International Association of Athletics Federation) for the participants of this sport as listed below –

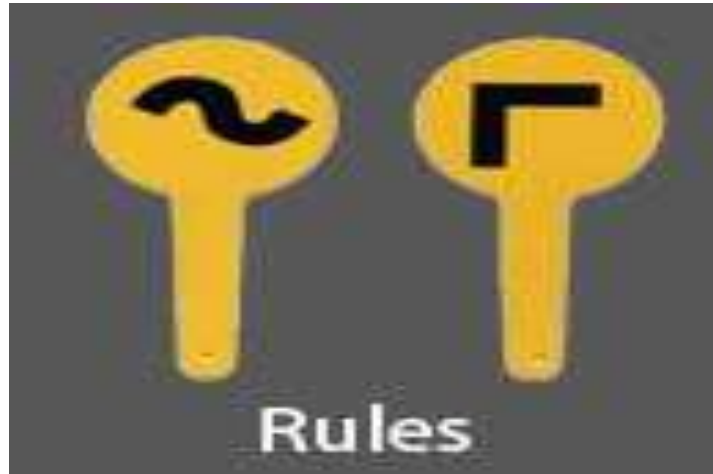
- **Loss of Contact Rule** – During speed walking the walker's feet should never lose contact with the ground as visible to the human eye. The heel of one foot should definitely touch the ground before the toe of the other foot leaves the ground. There will be a millisecond per stride where both the foot of the athlete lose contact with the ground, but are not in the range of visibility to the human eye and are undetectable.



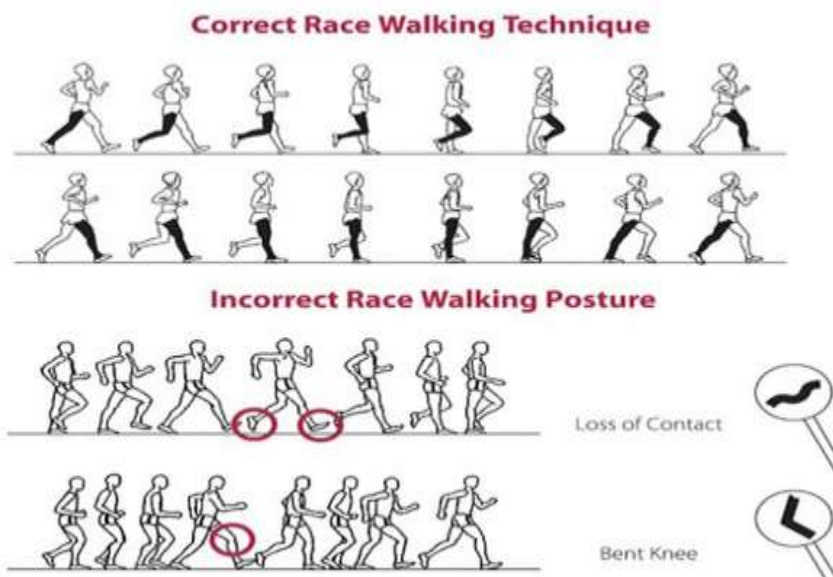
- **The Bent Knee Rule** – In the course of progressing the athlete's steps forward, the advancing leg making contact with the ground should be straightened from the hip to the foot. Until the other foot reaches to the vertical upright position, the bending of the knee indicates a violation of this rule. At any point of time the knees should be visible to the judges.



- **Yellow Paddle** – The judges can issue a yellow paddle to the walker as a caution when the walker is very close to breaking the above two rules. A walk judge can issue a yellow paddle for the same athlete only twice, once for loss of contact and once for bent knee.



- **Red Card** – Out of the appointed judges of the event, if any one judge has an opinion that the athlete has violated any of the above two rules, at that instant the judge issues a silent red card for that particular walker and will send it to the chief judge. The athlete is unaware of the red card being issued to him. Every single judge can issue a red card to all the walkers but only once in the whole competition.
- **Disqualification of an Athlete** – An athlete can only be disqualified from the walking competition by the chief judge. If the chief judge gets three such individual red cards from three different judges, he calls for that particular athlete's disqualification from the competition. The yellow paddles issued to the walkers are not considered as criteria for disqualification. If the athlete still continues the race even after disqualification being called out and finishes first.



## **SHOES**

Race walking is completely based on heel-to-toe motion with the walking technique of never losing foot contact with the ground which makes the Racewalking challenge more difficult for the athlete. The proper walking footwear with low heel enables easy rocking motion and eases the athlete to make their heel contact with the ground faster.

## **CLOTHES**

Both men and women need to put on comfortable clothing with sweat wicking ability. Men are on their colored jerseys and women in colored tank tops and shorts resembling their nation in the championship. Apart from body clothing the walkers should have sweat wicking socks unlike cotton socks which absorb sweat that causes discomfort to the athlete's feet

## **RACE WALKING: AN OLYMPIC SPORT**

Race Walking has been part of the Olympic Games since 1908 and features in World Championships at various levels, European Championships, Pan American Games, Commonwealth Games, All Africa Games and other international, continental and local track and field meetings. Distances presented are 20km for men and women, and 50km for men. Nicolene Cronje made South African history when she became the first women and second ever SA Race Walker to be sent to the Athens Olympic Games in 2004, since George Hazel who represented South Africa in the 20km and 50km race walking events at the 1960 Olympics in Rome. Marc Mundell competed in the 50km race walk at London 2012 where he bettered his own African & SA record in a time of 3hr55min32sec. Here is a list of some of

## **THE COMMON TERMS FREQUENTLY USED IN RACEWALKING:**

- On your Marks**– It is a phrase used to start the race and a warning sign for the athletes to be prepared for the race.
- STEP** – is a motion of the feet moving from front to back to make a foot contact with the ground followed by the other foot.
- Stride**– A consequent event of taking steps and progressing forward during the race by the walker.
- Stride Rate** – The number of strides taken per minute.
- Stride Length**– The distance between the one of the foot having contact with the ground to other foot retreating behind during progression of the walker's steps.
- Gait** – is referred to as the style or technique of walking during the competition.
- Gait Cycle** – is stated as the time taken to the heel strike of one leg until the heel strike of the same leg making a cyclical movement.



- **Stance Phase**– The phase during which the athlete takes his whole body weight on one leg and specifically on to the heel till the moment of lifting the foot once the toe is off.
- **Swing Phase** – The phase when the athlete’s toe is off the ground and the leg is not taking on any body weight till the athlete makes contact with the ground.
- **Flight Phase** – At any instant of time if the athlete’s both feet are not in contact with the ground and usually cannot be detected by the human eye and will last up to a millisecond when one foot is advancing and the other one retreating.
- **Heel-to-Toe** – is a technique implied by the walkers during Racewalking competitions to always maintain contact with the ground without bending the knee.
- **Loss of Contact** – Refers to one of the important rules of Racewalking, the walker’s feet should never lose contact with the ground as visible to the human eye. The heel of one foot should definitely touch the ground before the toe of the other foot leaves the ground.
- **Bent Knee** – Is the other important rule of Racewalking. While progression of the athlete’s steps forward, the advancing leg making contact with the ground should be straightened from the hip to the foot; until the other foot reaches to the vertical upright position the bending of the knee indicates a violation of this rule.
- **Yellow Paddle**– Refers to a caution given to athletes if they are very close to violating any rules during the competition.
- **Red Card** – Mentioned by the Chief Judge that the walker is disqualified from the race as three different walk judges have issued silently after noticing the violation of the rules.

## **SUMMARY**

### **Posture / Body Position: The most essential attribute to establish**

Most faults in technique can be attributed to incorrect posture . Sound posture is the ability to hold a body lean of up to 3- 5degrees with no flexion at the hip joints . Technically, when the support leg is directly under the body , a straight line should be able to be drawn through the shoulder , hip , knee and ankle joints . Many walkers are unable to achieve this due to :

**A** The pelvis tilted forward which pulls the hips downwards ( known as HollowBack , Sway Back or Lordosis ) .

**B.** Leaning from the hips with their backside stuck out ( this reduces hip rotation , shortens stride length and frequency )

**C.** Leaning to one side or excessive lateral hip movement .

**D.** Rounded shoulders will indirectly affect hip rotation as the elbow angle becomes reduced creating arm drive across and too close to the body .

E. Any structural problems such as spinal curvature, uneven leg length , foot pronation , flat feet , etc etc . Any weakness however minor will affect technique .

F. Many of these problems are strength related hence the need to develop strong back muscles , internal and external oblique muscles at the torso and the abdomen .



## REFERENCES

[file:///F:/WALK%20RACE/Racewalking\\_a\\_Guide\\_to\\_Better\\_Coaching.pdf](file:///F:/WALK%20RACE/Racewalking_a_Guide_to_Better_Coaching.pdf)

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<https://racewalk.com/howTo/shoulders.php>

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[https://www.tutorialspoint.com/racewalking/racewalking\\_quick\\_guide.htm](https://www.tutorialspoint.com/racewalking/racewalking_quick_guide.htm)

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