DEVELOPMENT OF YOUNG WALKERS

By G. Koroljov

The following text includes suggestions and recommendations on the selection and testing procedures to be employed in the developmental stages of potential young race walkers. The article is based on a translated summary from Legkaya Atletika, Moscow, USSR, No. 7, July 1986.

The contemporary selection and development of race walkers has to take into consideration several new factors, including the following:

— Performances have improved sharply over the last 10 years, as race walking is rapidly gaining popularity.

— The age of top level race walkers has dropped. Consequently the development starts at a younger age and top performances are reached earlier (20 to 26 years).

The development takes place in three major phases, with each phase responsible for certain tasks, adjusted to the individual needs and preparation levels of the athletes.

Phase I — Introduction to race walking (9 to 12 yrs.). General physical conditioning, motivation, learning the basic race walking technique, participation in first competitions.

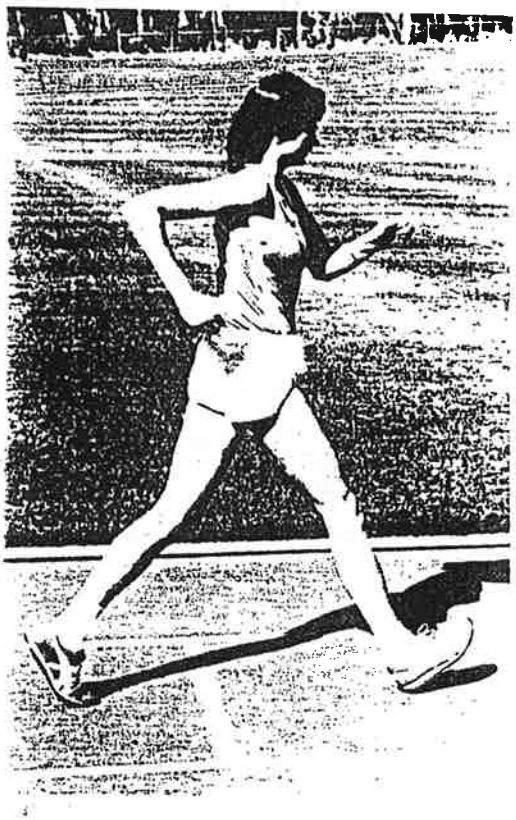
Phase II — Basic preparation (13 to 16 yrs.). General physical conditioning, motivation, development of advanced race walking technique, changing to more specific training, systematic participation in competitions.

Phase III — Advanced preparation (17 to 20 yrs.). Specific physical, technical, psychological and tactical development. Increased training and competition loads.

SELECTION SYSTEM

The selection of race walkers is made in three stages, each stage corresponding to a certain age range. The first stage selection is made on immediate test results followed by pedagogical observations throughout this training phase. The final analysis to establish the suitability of a young athlete to race walking is based on further test and long-term improvement of results.

The second stage takes into consideration performance predictions, based on standard endurance and specific race walking test results, as well as continuous observations during the advanced preparation phase. The aim of the third stage is to gain selection to representative teams.



TESTING

The functional capacities are evaluated by standard tests, including lung capacity (absolute and relative), maximum oxygen uptake, heart capacity, pulse recoveries etc. The establishment of the lung capacity is particularly important, as this indicator improves through training and age at the most by 20 to 30%.

Table 1: Prediction of Height in the 9 to 16 yrs. Age Range

Predicted Height (cm)	Age and Height					
	9	10	11	12	13	16
178 - 182 20km men	130 - 140	136 - 145	141 - 151	144 - 157	150 - 166	170 - 181
174 - 178 50km men	128 - 136	133 - 142	137 - 147	142 - 154	147 - 162	166 - 177
162 - 166 women	128 - 138	133 - 144	139 - 152	145 - 158	151 - 163	160 - 166

Other tests of importance are the establishment of Vo_2 max and the distribution of fast and slow switch muscle fibres. The evaluation of the relative values of VO_2 max should be based on the models of top-class race walkers — 70 o 75ml/kg/min. for men and 65 to 70ml/kg/min. for women. As the muscle fibre distribution is determined genetically and doesn't alter through training, it is important that slow twitch fibres are dominant in potential young race walkers.

Additional tests employed in the evaluation attempt to establish psychological and morphological factors. Psychological tests are used regularly in all of the major developmental phases to discover the athlete's psychological capacity to tolerate long, monotonous and intensive training and competition loads. The morphological evaluation is based on standard measurements, such as height, weights and the height-weight index, for comparison with top-level race walkers. An example of how to predict height is shown in table 1.

TRAINING

Parameters

Increase in the training volume in the introductory phase should occur almost unnoticed. Training must be stepped up gradually to eliminate psychological pressure as much as possible. Monotony should be avoided at all costs by employing different types of competitions, games, relays etc. The volume of walking and running is gradually increased from 600-990km a year at the age of nine to 1800-2100km at the age of 12 for boys. The corresponding increases for girls range from 400-700km to 1100-1300km a year.

The number of training sessions begins with 140-180 a year for nine-year-olds to reach 200-240 at the age of 12. The distribution (%) of running and walking changes for both sexes as follows: 9yrs. — 70:30; 10yrs — 60:40; 11yrs — 50:50; 12yrs — 40:60. The number of competitions begins with two races a year at the age of nine, gradually increased to 4-5 at the age of 12.

Table 2: Control Tests and Norms for the 9 to 12 yrs. Age Group.

Test	Boys (Age)				Girls (Age)			
	9	10	11	12	9	10	11	12
30m flying start	4.3-4.6	4.2-4.7	4.0-4.2	3.7-3.9	5.1-5.4	5.0-5.2	4.8-5.0	4.5-4.7
60m standing start	10.2-10.6	10.1-10.4	9.8-10.1	9.5-9.8	11.0-11.6	10.7-11.2	10.2-10.7	9.7-10.2
300m run	85-70			50-55	70-75			55-60
800m run		2.35-2.50				2.50-3.10	2.40-3.00	
1500m run			4.55-5.15					5.10-5.30
3000m				10.40-11.20				
10 min run (m)					1500-1800			
15 min run (m)	2700-3000							
St. long jump (m)	1.50-1.60	1.60-1.70	1.70-1.80	1.85-1.90	1.35-1.45	1.40-1.50	1.45-1.55	1.50-1.60
St. triple jump (m)	5.10-5.40	5.30-5.60	5.50-5.80	4.30-4.60	4.50-4.80	4.70-5.00	4.90-5.20	
Pull-ups (reps)	2-4	3-6	5-7	6-10				
Push-ups (reps)	4-7	5-10	15-20	20-25	3-5	4-6	6-10	10-14
Racewalk 1km	5.15-5.45	5.00-5.30	4.30-4.50		6.00-6.50	5.40-6.30	5.10-5.50	
2km		10.20-11.20	9.30-11.20				11.00-12.10	10.00-11.30
3km				15.00-15.45				16.20-17.10
5km				25.30-26.30				

Table 3: Control Tests and Norms for the 13 to 16 yrs. Age Group.

Test	Boys (Age)				Girls (Age)			
	13	14	15	16	13	14	15	16
30m flying start	3.5-3.7	3.4-3.6	3.3-3.5	3.2-3.4	4.4-4.6	4.3-4.5	4.2-4.4	4.1-4.3
60m standing start	8.9-9.2	8.7-9.0	8.3-8.6	8.2-8.4	9.4-9.7	9.2-9.4	9.0-9.2	8.8-9.0
100m standing start	15.0-15.6	14.4-15.0	13.8-14.2	13.2-13.6	17.2-17.8	16.6-17.2	16.0-16.6	15.4-16.0
1500m					4.50-5.10			
3000m	10.20-11.00	10.00-10.40	9.40-10.20	9.00-9.40		11.00-11.40	10.40-11.20	10.20-11.00
5000m		16.40-17.40	16.00-17.00					
5km road	18.00-19.00						18.30-19.30	
10km road		35.00-38.00	35.00-37.00	34.00-36.00				38.00-40
15km road			54.30-57.00	53.30-56.30				
St. triple jump (m)	1.90-2.05	2.05-2.15	2.15-2.25	2.20-2.30	1.55-1.65	1.60-1.70	1.70-1.80	1.80-1.90
St. triple jump (m)	6.00-6.30	6.20-6.50	6.40-6.70	6.60-7.00	5.10-5.40	5.20-5.50	5.40-5.70	5.60-6.00
St. 5 hops (m)	9.60-10.40	10.10-10.90	11.20-12.00	11.60-12.40	8.60-8.90	9.10-9.90	10.20-11.00	10.60-11.40
Pull-ups (reps)	8-10	8-12	10-12	10-14				
Push-ups (reps)	25-30	30-35	35-40	40-45	12-16	14-18	16-20	18-22
Racewalk 3km	14.00-24.40	13.20-14.00	13.00-13.40		15.30-16.20	14.50-15.30	14.10-15.00	13.40-14.20
5km	25.00-26.00	24.00-25.00	23.00-24.00			25.00-26.00	24.30-25.20	23.50-24.30
10km		50.00-52.00	49.00-51.00	47.00-49.00				49.30-52.00
20km				1.35.00 - 1.44.00				

Periodization

The training year in the introductory phase (9 to 12yrs) is divided into four three-month cycles, each completed with a series of control tests. The recommended tests and norms for the 9 to 12 years age range are presented in table 2. Table 3 shows the test battery and norms for the 13 to 16 years age group.

MICROCYCLES

The basic planning of training in the introductory phase can be arranged around the following microcycles:

9-year-olds

Monday: 2 to 3km walk, or 1.5 or 2km run. Games (10min.), general conditioning.
Tuesday: Rest.
Wednesday: Sprinting 6 x 30m, or 3 x 60m, plus 3 x 100m.
Thursday: Rest.
Friday: 4 to 6km stroll. Games (10 to 15min.), general conditioning.
Saturday: Rest.

10-year-olds

Monday: 4 to 5km walk, or 3 to 4km run. Games (10 to 15min.), general conditioning.
Tuesday: Sprinting 5 x 60m plus 3 x 200m. Games (15 to 20min.), general conditioning.
Wednesday: Rest.
Thursday: 2 to 3 x 1000m walk. Games (10 to 15min.), general conditioning.
Friday: 6 to 8km stroll or 5 to 6km walk. Games (15 to 20min.), general conditioning.
Saturday: Rest.

11-year-olds

Monday: 5 to 6km walk, or 4 to 5km run.
Tuesday: Sprinting 4 x 60m plus 3 to 4 x 200m. Games (20 to 30min.), general conditioning.
Wednesday: Rest.
Thursday: 3 to 5km walk. Games (15 to 20min.), general conditioning.
Friday: 8 to 10km stroll. Games (20 to 30min.), general conditioning.
Saturday: Rest.

12-year-olds

Monday: 4 to 5km run with accelerations, or 4 to 5 x 400m, or 3 x 4 x 400m. Games (15 to 20min.), general conditioning.
Tuesday: 8 to 10km walk.

	Games (15 to 20min.), general conditioning.
Wednesday:	5 to 6km run. Games (20 to 30min.), general conditioning.
Thursday:	Rest.
Friday:	4 x 5 x 1000m walk, or 3 to 5km walk. Games (15 to 20min.), general conditioning.
Saturday:	10 to 12km stroll. Games (20 to 30min.), general conditioning.

The above microcycles apply for both sexes but the volume of training for girls should be around 65 to 80% of the boy's total. The suggested microcycles are meant to provide only an example. Different structures can be employed, provided a combination of introductory and rest cycles is applied.

Race Walking Teaching Progression

1) Race Walking is a progression of normal everyday walking
2) Start walking in group down the track. Slowly building up speed. As you do, you will note that you need to shorten your pendulums (arms) into a 90 degree position.
3) Swing arms from shoulders, arms bent at elbows 90 degree. Swing arm from centre mid point of chest back to hip. Keep shoulders relaxed and swing smoothly. Do not swing arms across this centre point. This will cause you to "fly" with these wings that then poke out sideways! Hold hands loosely open and vertical, with thumb sitting on top of index finger.
4) Just prior to landing the front foot, flex toes up. This gives extra stride length and helps to straighten knee at point of impact.
5) Front leg must be straightened at point of contact and remain straightened only until the vertical position as it passes under your body. (knees rule)
6) At least one foot must be in contact with the ground at all times. (contact rule) This is visible to the Judges eye (not video equipment)
7) Shorter more frequent strides takes less energy than long ones, therefore as distance increases - stride length should probably decrease fractionally!
8) Look forward - 20 metres in front - not your feet
9) Very slight forward lean of entire posture (not bending forward from hips) but not as much as running and not straight up and down either!
10) Drills - stationary (swing arms whilst hips rotating in opposite directions) for hip mobility
11) Drill - stationary (swing arms and bend knees/drop hips)
12) Drill - walk along straight lane line
13) Drill - walk along lane line with arms held up at shoulder height (out sideways) don't let shoulders twist - keep arms still
14) Drill - walk zig zag between the lines in one lane - helps hip mobility
15) Most importantly - stay relaxed (especially shoulders)
16) Get participants to walk past the group (showing their style)
17) Judges can caution you for knees once and contact once. Once they have reported you, they cannot report you again. This may or may not be verbal (depending on age groups). Three reports will DISQ athlete - but only after race is complete. This is different to the Olympics and Road Walks where they try to make sure that the winner is the one that crosses the line first, thus they signal the athlete that they are to "pull out" as they have been DISQ.!

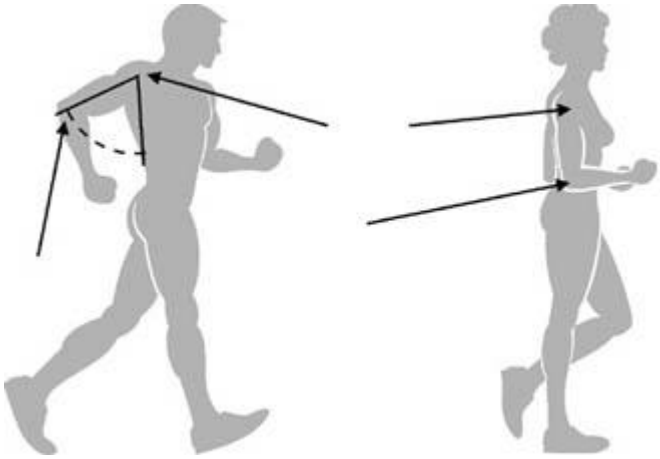
Race Walking Technique

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.

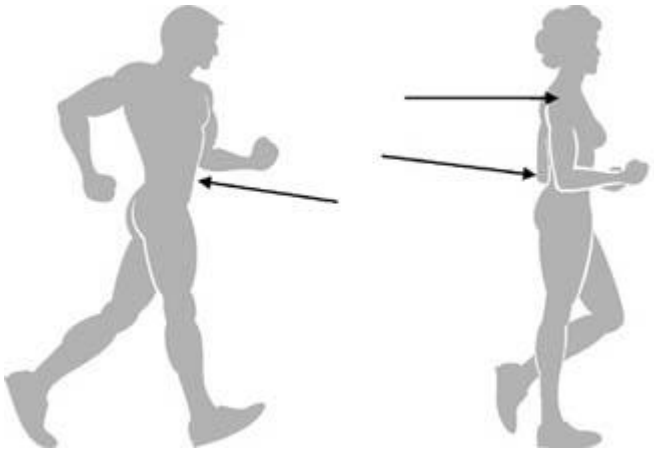
Arms

- 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. 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.



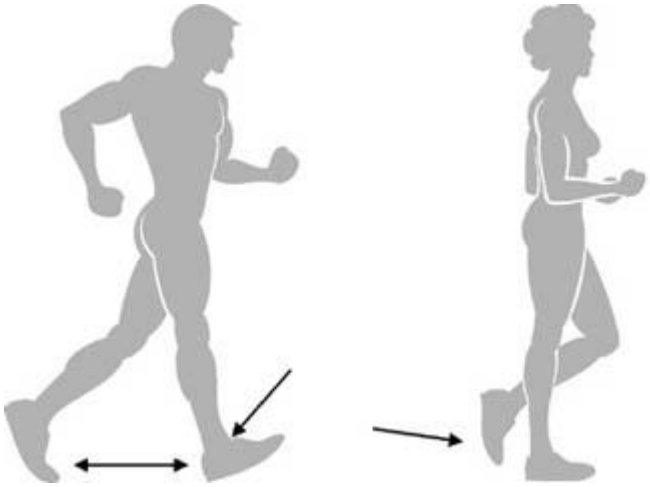
Torso

- 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 case "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.



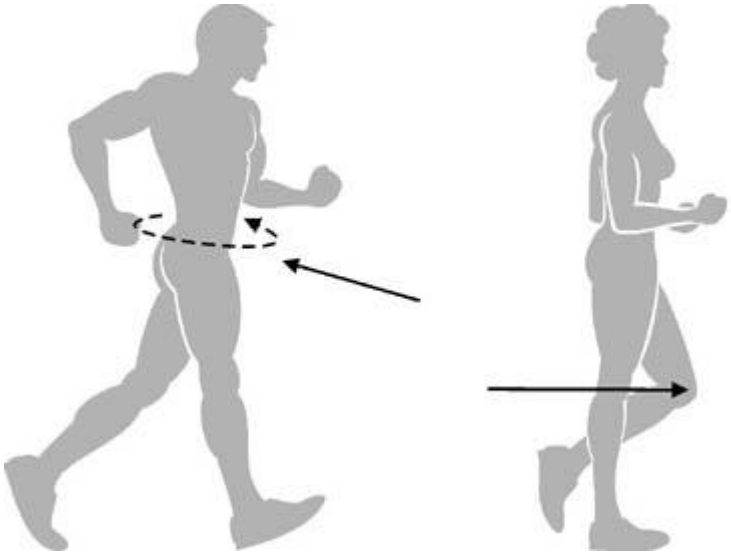
Feet

- One foot must constantly be in contact with the ground. The lead foot must make contact before the rear foot looses contact.
- Landing too far forward of the torso is over-striding 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 over-striding.
- 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.



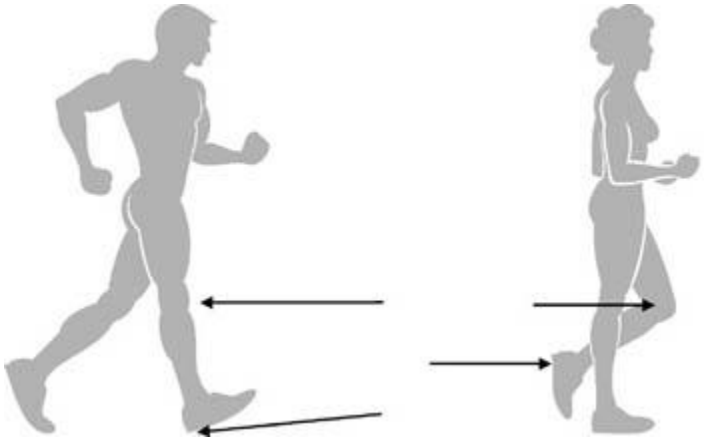
Hips

- 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.



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.



RACE WALKING

Race Walking is a year round event. During the summer months in Little Athletics, it starts off as a short distance of 200 metres for the U6's up to the top distance of 1500 metres for the U11's to the U15's. During the winter months longer distances from 1500m to 8km are available for these ages in the Walkers Club Competition.

Race Walking is an extension of street walking with an exaggerated hip and arm action. These actions improve stride length and overall body control.

Success can come very quickly in this event. Sometimes this success can give a false sense of mastery. Technical mastery during an athlete's early years is of paramount importance for long term development.

Judges

This event is strictly governed by the rules of the event. Judges are placed around the outside track to ensure that the race is conducted fairly. They are also there to help athletes. They should be appreciated for this. Athletes should be instructed to listen to the Judges.

Warning

- Athletes will be warned verbally by a Judge when they are in danger of failing to comply with the definition of Race Walking.
- A Judge can not warn a second time for the same offence. A caution (warning) means that the athlete is at his/her best and that he/she must steady and keep concentrating.

Reports

Athletes will be reported verbally by a judge if, in that Judge's opinion, they fail to comply with the definition of Race Walking. A Judge can only report an athlete once (no matter what the offence).

If a report is received, the athlete should slow down and concentrate on basic technique.

Rules

Race Walking is a progression of steps so taken that unbroken contact with the ground is maintained.

- During the period of each step, the advancing foot of the walker must make contact with the ground before the rear foot leaves the ground. (Contact)

- The supporting leg must be straightened (i.e. not bent at the knee) for at least one moment when in the vertically upright position. (Knees)

- There are normally 4 to 6 judges used in an event. Where 4 judges are used, reports by 2 judges lead to disqualification. Where 5 or 6 judges are used, reports by 3 judges lead to disqualification.

- When issuing a report or a caution, judges must call out the number of the competitor and a short version of the rule broken.

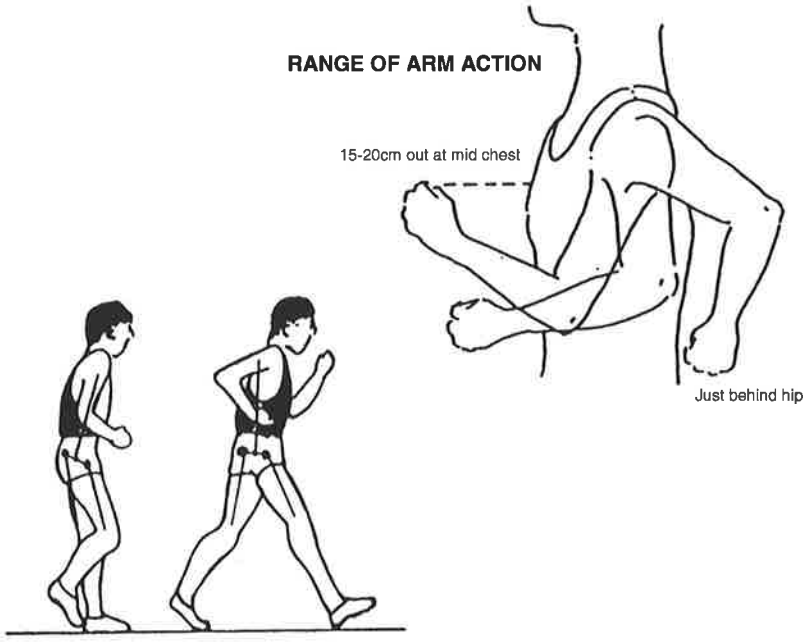
- The Senior Judge collates all reports from all judges at the end of the event and advises the athletes and the recorder of any disqualifications.

Technique

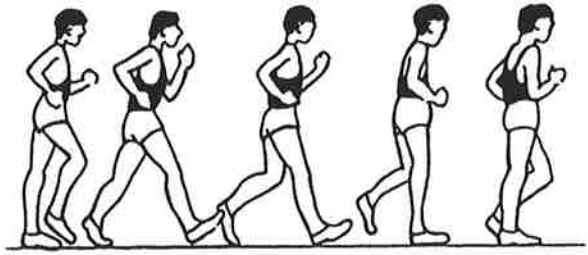
The first requirement of a Race Walker is perfect posture. This is of prime importance in maintaining technique and safe walking.

- A slight forward lean of the trunk to completely upright is best.

- The head is steady and upright. The eyes are looking forward approximately 20 metres down the track.



Hip action in race walking



Race walking technique

- The shoulders should be kept relaxed and carried low with no rolling action. They should be at right angles to the direction of travel.
- The arms hang low from the shoulder with the elbows bent to an angle of 90 degrees. The forearms and hands, with loosely curled fists, are relaxed.
- The elbow is driven in a straight line backwards close to the body until the hand is just behind the hip.
- On the forward swing the arm moves inward and upward, close to the body, toward the mid-line of the body (centre of the chest) and 15 to 20 cm away from the chest.
- The hips are pushed forwards and kept low. (Keep the tail in.)
- The legs straighten on landing and are held straight through the stride. The stride will be long and low.
- The feet must travel in a straight line.
- The toes are pulled back towards the shin just before the heel lands. They are then pushed into the ground as far behind as possible with the supporting leg. The hips will be turned.

Do not try to do too much at the one time. This is a very technical event.

Warm Up
Part of this section should be spent **walking - not too fast!**

The following exercises could be used. (10 repeats)

- Head nodding back and forth, then sideways.
- Backward arm circles.
- Cross over the feet, touch the toes. Recross the feet and repeat.
- Hip circles. First to the left and then to the right. Keep the shoulders still and to the front.
- Bent knee sit ups with a twist.
- Walking on the spot.
- Straight leg swings. Stand on a kerb or raised area.

Drills

- Place the arms behind the back, clasp hands, push the backs of the hands against the hips and push the shoulders back. Start brisk walking in this position pushing the hips into a forward position.
- The athlete stretches arms out to the sides at shoulder level, palms down. Walk briskly keeping the shoulders fairly still.
- Have the athlete set their arms at a 90 degree angle. Get the athlete to turn the forearms over so that the palms face towards the ground. Have the athlete walk briskly whilst relaxing the shoulders with the palms open. Concentrate on swinging the arms correctly.
- To correct in-sufficient hip rotation, walk at a moderate speed in a snaking path or in a figure eight shape.