

HOW TO INTEGRATE ELECTROSTIMULATION

INTO MARATHON PREPARATION



TESTIMONIALS



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It has been almost 20 years since I started using VO2 max assessment tests and training thresholds on runners and cyclists. As a Sports Cardiologist, it is exciting that from an individual's data it is possible to offer a customized training program.

As well as a heart-rate monitor, I often recommend using electrical muscle stimulation; EMS provides a useful compliment to conventional training sessions, particularly in the following examples:

- After intense 'qualitative' sessions, usually involving a 30/30 split (30 seconds on, 30 seconds off resting)
 or after a session at threshold, using the 'Active Recovery' programme can speed up the recovery process,
 building muscles, and thus empowering athletes to train again the next day without qualitative or
 quantitative accumulative fatigue. This reduces the risk of over-training.
- The 'Endurance' program is not a substitution for conventional quantitative long run session, but it helps to prepare the muscles stimulated during the active session. Electro-stimulation can shorten the duration of a session by 30 minutes, limiting the musculoskeletal fatigue while maintaining the same muscle charge. Even in exceptional circumstances, such as poor weather or geographical impossibility, the complete 'Endurance' program can mitigate the adverse consequences of missing a session.
- In the days leading up to the competition, it is recommended to reduce the training workload. In this case, I advise using the 'Capillarisation' Program every 2 days, 10 days before the race. This Program increases the blood flow, thereby improving the muscular efficiency during an endurance effort. It also has an advantage in not creating additional muscle fatigue. The 'Capillarisation' session can be integrated on a weekly training schedule in alternation with a muscle-strengthening session. There is an drastic improvement in stride-efficiency the days following Capillarisation. This is easy to track with a heart rate monitor; the runner will see an increase in speed whilst keeping the same heart-rate level.

The other area in which muscle stimulation is beneficial is for a prolonged immobilization as a result of a disease, muscle or tendon injury or after an accident or trauma. In all of the above cases, immobilization will result in atrophy and physical degeneration. Electrical muscle stimulation programs like 'Reinforcement' or 'Muscle Atrophy' (if atrophy is present), used on a daily basis, will limit the adverse consequences of ceasing to train. Keep in mind that it takes twice the length of time incapacitated to recover the former muscle strength and condition.









WHEN TO START PREPARING

- Each training plan lasts 10 weeks.
- The prerequisite for this training is to be in overall good shape and to train on a regular basis for several months before the race.
- For runners who are not used to muscle stimulation (especially with the strengthening Program) a 2-3 week initiation is highly recommended before starting with the 10 week training plan.

ADJUSTING STIMULATION INTENSITY IS THE KEY!

For Programs inducing powerful muscular contractions (Endurance, Strength, Cross training, Core stabilization)

• Maximum toleration: It is crucial to reach the highest level of intensity possible (though the session must always remain bearable). Intensity determines the number of muscle fibers which are engaged or 'recruited' by the stimulation. The best way to determine your maximum toleration is simply through your own judgement of what your body can cope with. The contractions must be powerful without ever becoming intolerable. The progress of a stimulated muscle will be greater if the Compex device recruits a high number of its fibers.

SEVERAL RULES TO HELP YOU ACHIEVE THIS:

- Apply the electrodes according to the diagrams
- Consider changing your electrodes on a regular basis. If the gel layer on the electrode deteriorates, it will be less conductive and you will not be able to achieve higher levels of stimulation.
- Always look to progress:
 - Increase the intensity marginally every 3,4 or 5 contractions throughout a session.
 - In subsequent sessions aim to exceed the level of intensity reached in the previous session
 - It is often more comfortable to voluntarily contract the muscles, synchronised with the stimulation

SIMILAR PROGRAMS ACROSS DIFFERENT COMPEX DEVICES

Sometimes, Compex models will use different names to refer to the same program type. Below is a key so you can identify the correct program:

- Capillarisation = Oxygenation
- Core stabilization = Muscle building
- Training recovery = Active recovery

FOR TRAINING RECOVERY AND CAPILLARISATION PROGAMMES

Increase the intensity gradually; it should produce visible muscular twitches.

POSITION OF ELECTRODES

FOR ENDURANCE, STRENGTH AND CROSS TRAINING PROGRAMS

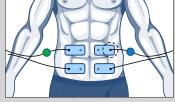






WIRELESS COMPEX DEVICES

FOR CORE STABILIZATION PROGRAM







WIRE COMPEX DEVICES



WIRELESS COMPEX DEVICES

FOR TRAINING RECOVERY AND CAPILLARISATION PROGRAMS







WIRE COMPEX DEVICES



WIRELESS COMPEX DEVICES

BODY POSITIONING AND COMBINED WORKOUT

QUADRICEPS: STRENGTH OR CROSS TRAINING PROGRAM





WIRE ELECTRODE PLACEMENT

WIRELESS ELECTRODE PLACEMENT



OR

- · Sit with knees bent at approximately 90°
- Secure the ankles to avoid knee extension when there is a powerful contraction
- Sit on chair
 - When the contraction begins, position yourself in a semi-squat
 - Sit back down at the end of the contraction
 - Keep the back straight, lower back arched and eyes facing forward (horizontal)

QUADRICEPS: FNDURANCE PROGRAM





WIRE ELECTRODE PLACEMENT

WIRELESS ELECTRODE PLACEMENT

- Relaxed, sitting or lying down with knee extended
- Find the most comfortable position
- Given the long duration of this program, it is possible to change positions during the session

ABS AND LOW BACK: CORF STABILIZATION PROGRAM







WIRE ELECTRODE PLACEMENT

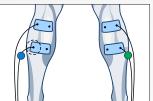
WIRELESS ELECTRODE PLACEMENT



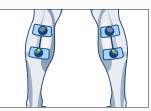
- Sit on a chair, back straight without resting against the back of the chair
- During each contraction it is recommended you:
- Exhale slowly to empty the lungs for the duration of the contraction
- Pull in the belly

TRAINING RECOVERY AND CAPILLARISATION PROGRAMS









WIRE ELECTRODE PLACEMENT

WIRELESS ELECTRODE PLACEMENT



- Comfortable body position
- Lie down with foot/leg elevated from the ground

OBJECTIVES

OBJECTIVE: 5 HOURS

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
WEEK 1	REST	Warming up 30min 10x 30s/30s 15min relax Training recovery Quads/Calves	REST Endurance 1 Quadriceps	FOOTING 1h15	REST Endurance 1 Quadriceps	REST	LONG RUN 1h45 Capillarisation Quads/Calves
WEEK 2	REST	Warming up 30min 10x 45s/45s 15min relax Training recovery Quads/Calves	REST Endurance 1 Quadriceps	FOOTING 1h15	REST Endurance 1 Quadriceps	REST	LONG RUN 2h Capillarisation Quads/Calves
WEEK 3	REST	Warming up 30min 2x (8x 30s/30s) 15min relax Training recovery Quads/Calves	REST Endurance 1 Quadriceps	FOOTING 1h15	REST Endurance 1 Quadriceps	REST	LONG RUN 2h Capillarisation Quads/Calves
WEEK 4	REST	MAS Warming up 30min 2x (10x 30s/30s) 15min relax Training recovery Quads/Calves	REST Endurance 1 Quadriceps	FOOTING 1h	REST Endurance 1 Quadriceps	REST	RACE 15KM OR HALF MARATHON Training recovery Quads/Calves
WEEK 5 TRANSITION WEEK	REST	REST	FARTLEK TRAINING 1h Training recovery Quads/Calves	REST	REST Endurance 1 Quadriceps	REST	LONG RUN 2h Capillarisation Quads/Calves

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
WEEK 6	REST	THRESHOLD SESSION Warming up 30min 3x 2km 15min relax Training recovery Quads/Calves	REST Endurance 2 Quadriceps	FOOTING 1h30	REST Endurance 2 Quadriceps	REST	2h Capillarisation Quads/Calves
WEEK 7	REST	THRESHOLD SESSION Warming up 30min 3x 2.5km 15min relax Training recovery Quads/Calves	REST Endurance 2 Quadriceps	FOOTING 1h15 + 8 straight lines Training recovery Quads/Calves	REST Endurance 2 Quadriceps	REST	LONG RUN 2h15 Capillarisation Quads/Calves
WEEK 8	REST	THRESHOLD SESSION Warming up 30min 3x 3km 15min relax Training recovery Quads/Calves	REST Endurance 2 Quadriceps	FOOTING 1h30 + 10 straight lines Training recovery Quads/Calves	REST Endurance 2 Quadriceps	REST	LONG RUN 2h15 Capillarisation Quads/Calves
WEEK 9	REST	THRESHOLD SESSION Warming up 30min 4x 2.5km 15min relax Training recovery Quads/Calves	REST Endurance 2 Quadriceps	FOOTING 1h30 + 12 straight lines Training recovery Quads/Calves	REST Endurance 2 Quadriceps	REST	LONG RUN 1h45 Capillarisation Quads/Calves
WEEK 10	REST	FOOTING 45min	REST Capillarisation Quads/Calves	REST Capillarisation Quads/Calves	FOOTING 30min optional Capillarisation Quads/Calves	REST Capillarisation Quads/Calves	MARATHON

Optional: 3x/week Core stabilization Program on Tuesday, Friday and Saturday during week 1 to 4 and 6 to 9.

OBJECTIVES

OBJECTIVE: 4 HOURS

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
WEEK 1	REST	FOOTING 1h15	REST Endurance 1 Quadriceps	WAS Warming up 30min 10x 30s/30s 15min relax Training recovery Quads/Calves	REST Endurance 1 Quadriceps	FOOTING 1h	LONG RUN 1h45 Capillarisation Quads/Calves
WEEK 2	REST	FARTLEK TRAINING 1h Training recovery Quads/Calves	REST Endurance 1 Quadriceps	MAS Warming up 30min 10x 45s/45s 15min relax Training recovery Quads/Calves	REST Endurance 1 Quadriceps	FOOTING 1h15	2h Capillarisation Quads/Calves
WEEK 3	REST	FOOTING 1h + 10 straight lines	REST Endurance 1 Quadriceps	MAS Warming up 30min 2x (8x 30s/30s) 15min relax Training recovery Quads/Calves	REST Endurance 1 Quadriceps	FOOTING 1h20	LONG RUN 2h Capillarisation Quads/Calves
WEEK 4	REST	FARTLEK TRAINING 1h15 Training recovery Quads/Calves	REST Endurance 1 Quadriceps	MAS Warming up 30min 2x (10x 30s/30s) 15min relax Training recovery Quads/Calves	FOOTING 1h +12 straight lines Endurance 1 Quadriceps	REST	RACE 15KM OR HALF MARATHON Training recovery Quads/Calves
WEEK 5 TRANSITION WEEK	REST	REST	FARTLEK TRAINING 1h Training recovery Quads/Calves	REST	REST Endurance 1 Quadriceps	REST	LONG RUN 1h45 Capillarisation Quads/Calves

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
WEEK 6	REST	FOOTING 1h15	REST Cross training 1 Quadriceps	THRESHOLD SESSION Warming up 30min 3x 2km 15min relax Training recovery Quads/Calves	REST Cross training 1 Quadriceps	1h + 10 straight lines	2h Capillarisation Quads/Calves
WEEK 7	REST	FARTLEK TRAINING 1h Training recovery Quads/Calves	REST Cross training 1 Quadriceps	THRESHOLD SESSION Warming up 30min 4x 2km 15min relax Training recovery Quads/Calves	REST Cross training 1 Quadriceps	FOOTING 1h + 10 straight lines	2h Capillarisation Quads/Calves
WEEK 8	REST	FARTLEK TRAINING 1h15 Training recovery Quads/Calves	REST Cross training 1 Quadriceps	THRESHOLD SESSION Warming up 30min 3x 3km 15min relax Training recovery Quads/Calves	REST Cross training 1 Quadriceps	FOOTING 1h30 of which 30min at marathon pace	LONG RUN 2h15 Capillarisation Quads/Calves
WEEK 9	REST	THRESHOLD SESSION Warming up 30min 4x 2.5km 15min relax Training recovery Quads/Calves	REST Cross training 1 Quadriceps	FOOTING 1h30 + 12 straight lines Training recovery Quads/Calves	REST Cross training 1 Quadriceps	REST	LONG RUN 1h45 Capillarisation Quads/Calves
WEEK 10	REST	FOOTING 45min	REST Capillarisation Quads/Calves	REST Capillarisation Quads/Calves	FOOTING 30min optional Capillarisation Quads/Calves	REST Capillarisation Quads/Calves	MARATHON

Optional: 3x/week Core stabilization Program on Tuesday, Friday and Saturday during week 1 to 4 and 6 to 9.

OBJECTIVES

OBJECTIVE: 3 HOURS OR LESS

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
WEEK 1	REST	FOOTING 1h Strength 1 Quadriceps	MAS Warming up 30min 10x 30s/30s 15min relax Training recovery Quads/Calves	FOOTING 1h15	REST Strength 1 Quadriceps	MAS Warming up 30min 10x 45s/45s 15min relax Training recovery Quads/Calves	LONG RUN 1h30 Capillarisation Quads/Calves
WEEK 2	REST	FOOTING 1h Strength 1 Quadriceps	MAS Warming up 30min 10x 45s/45s 15min relax Training recovery Quads/Calves	FOOTING 1h15	REST Strength 1 Quadriceps	Warming up 30min 8x 60s/60s 15min relax Training recovery Quads/Calves	LONG RUN 1h45 Capillarisation Quads/Calves
WEEK 3	REST	FOOTING 1h Strength 1 Quadriceps	MAS Warming up 30min 10x 60s/60s 15min relax Training recovery Quads/Calves	FOOTING 1h15	REST Strength 1 Quadriceps	MAS Warming up 30min 2x (8x 30s/30s) 15min relax Training recovery Quads/Calves	LONG RUN 2h Capillarisation Quads/Calves
WEEK 4	REST	FOOTING 1h15 Strength 1 Quadriceps	MAS Warming up 30min 2x (10x 30s/30s) 15min relax Training recovery Quads/Calves	FOOTING 1h Strength 1 Quadriceps	FARTLEK TRAINING 1h	REST	RACE 15KM OR HALF MARATHON Training recovery Quads/Calves
WEEK 5 TRANSITION WEEK	REST	FOOTING 1h15	REST	REST 1h Strength 1 Quadriceps	FARTLEK TRAINING 1h	REST	LONG RUN 1h45 Capillarisation Quads/Calves

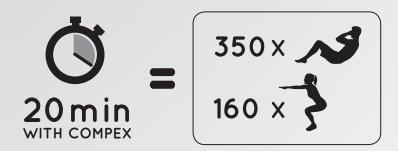
	MONDAY REST	TUESDAY FOOTING 1h Strength 2	WEDNESDAY THRESHOLD SESSION Warming up 30min	THURSDAY FOOTING 1h15	FRIDAY REST Strength 2 Quadriceps	SATURDAY THRESHOLD SESSION Warming up 30min	SUNDAY LONG RUN 2h Capillarisation
WEEK 6		Quadriceps	3x 2km 15min relax Training recovery Quads/Calves			3x 3km 15min relax <i>Training recovery</i> <i>Quads/Calves</i>	Quads/Calves
WEEK 7	REST	FOOTING 1h15 Strength 2 Quadriceps	MAS Warming up 30min 10x 30s/30s 15min relax Training recovery Quads/Calves	FOOTING 1h15 of which 30min at marathon pace	REST Strength 2 Quadriceps	THRESHOLD SESSION Warming up 30min 3x 3km 15min relax Training recovery Quads/Calves	2h Capillarisation Quads/Calves
WEEK 8	REST	FOOTING 1h15 Strength 2 Quadriceps	THRESHOLD SESSION Warming up 30min 3x 4km 15min relax Training recovery Quads/Calves	FOOTING 1h15 of which 30min at marathon pace	REST Strength 2 Quadriceps	FARTLEK TRAINING 1h15 Training recovery Quads/Calves	2h Capillarisation Quads/Calves
WEEK 9	REST	FOOTING 1h Strength 2 Quadriceps	THRESHOLD SESSION Warming up 30min 3x 2.5km 15min relax Training recovery Quads/Calves	FOOTING 1h of which 20min at marathon pace	REST Strength 2 Quadriceps	FARTLEK TRAINING 1h Training recovery Quads/Calves	LONG RUN 1h45 Capillarisation Quads/Calves
WEEK 10	REST	FOOTING 45min	REST Capillarisation Quads/Calves	REST Capillarisation Quads/Calves	FOOTING 30min optional Capillarisation Quads/Calves	REST Capillarisation Quads/Calves	MARATHON

Optional: 3x/week Core stabilization Program on Tuesday, Friday and Saturday during week 1 to 4 and 6 to 9.

BOOST YOURPERFORMANCE*

IMPROVE YOUR STRENGTH	+27%
IMPROVE YOUR EXPLOSIVITY	+15%
IMPROVE YOUR VERTICAL JUMP	+14%
INCREASE YOUR MUSCLE VOLUME	+8%
REDUCE LACTIC ACID -25 %	

^{*} Scientific studies available on compex.info



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