

When Swedish doctors began to study the physical demands on various sportsmen in 1965, they did their main tests on motocross riders. Some of the human guinea pigs who volunteered at the dawn of this research were Rolf Tibblin, Torsten Hallman, Sten Lundin and a youthful Åke Jansson.

Professor Bengt Saltin of the Swedish physiological Institution and Chief Instructor Göran Agnevik of the Gymnastics and Sports Training College compared top motocross racers against an equal number of student physical training teachers—men of the same age and in the pink of physical condition. After a series of tests, the results were astonishing.

Although there was not much difference in actual strength and stamina between the two groups, the motorcycle racers had the ability to work at their peak for twice, or even three times as long as the Phys. Ed. students. In particular the tests put the strain on legs, arms and wrists with intense pressure on and of, alternately for long periods. The test closely reproduced the physical demands of long cross-country races.

As a result of these studies and the experiences gained from Team Husqvarna, the traditional ideas of physical conditioning had to be revised drastically, where they concerned training motorcycle riders. Flat-out endurance training, like running for long periods at a time, for instance, does not really build the muscles you need for motocross racing, or fast trail riding.

There are many fine books on the market that tell you how to be a top-notch motorcycle racer, but most do not deal sufficiently with the rider's mind and body. Your psychological and physical condition are equally important to winning motocross as your riding technique and the performance of your motorcycle.

In brief, the most important elements in a rider's success are:

- A. Psychological (will power, motivation).
- B. Maximum conversion of energy (oxygen absorption, muscle endurance capacity).
- C. Teamwork between nerves and muscles (talent, strength).
- D. Riding technique (smoothness, ability to develop thinking and technique, reasoning power).

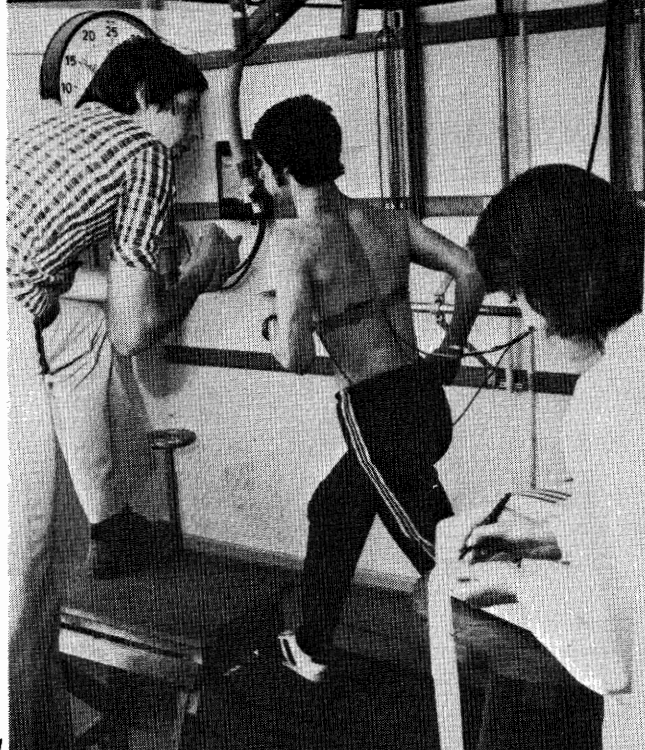


Fig. 65.1

Difference between trained motocross riders and a control group of untrained 20-25 year olds, isometric handstrength under the following conditions:

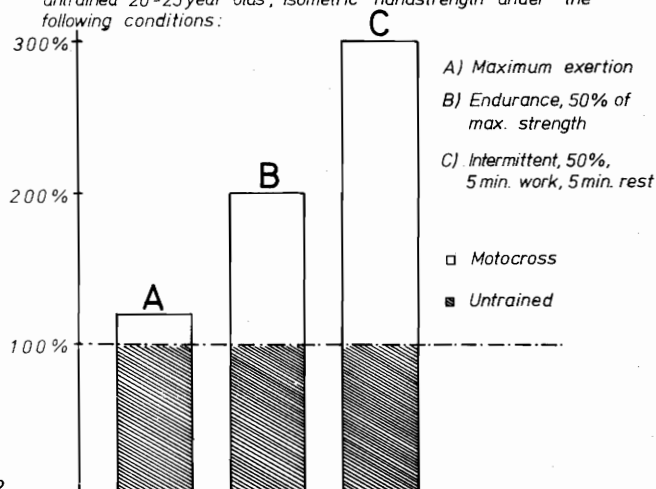


Fig. 65.2

Difference in isometric leg strength under the same conditions as above.

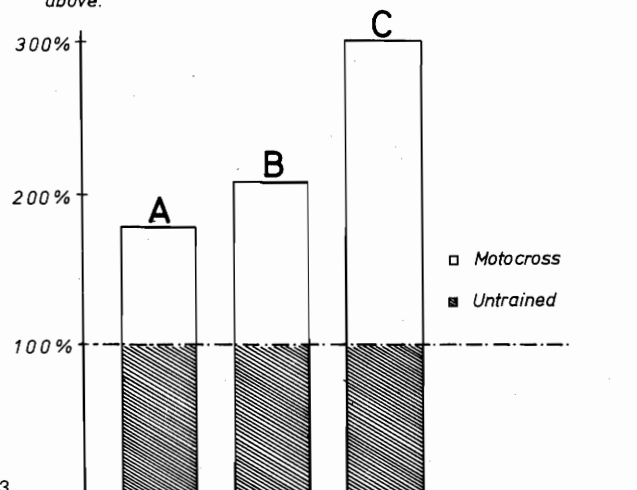
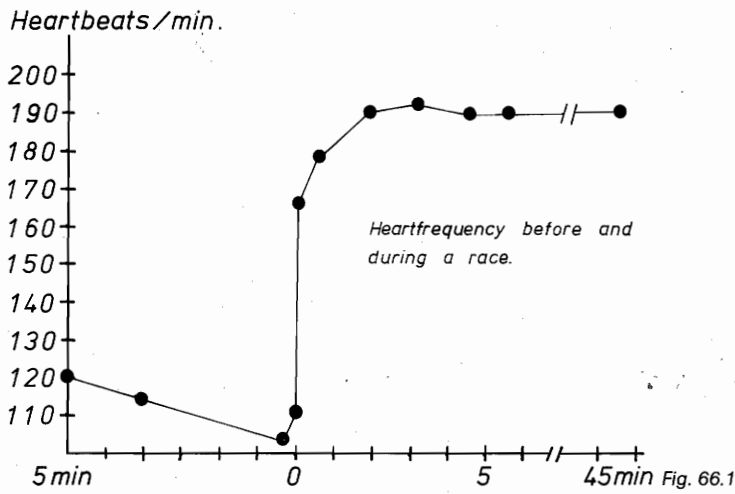


Fig. 65.3



The amount of these elements varies a great deal depending on an individual's native character.

A rider with developed riding technique blessed by native physical and mental talents burns up less energy during a race and needs less physical training than those of us who are less fortunately endowed.

Whether your goal is to wear the number one on your jersey or just able to ride cowtrails faster, safely, for a few minutes longer, the information in this chapter will guide your efforts to that achievement by the most direct route, without wasting any effort on your part.

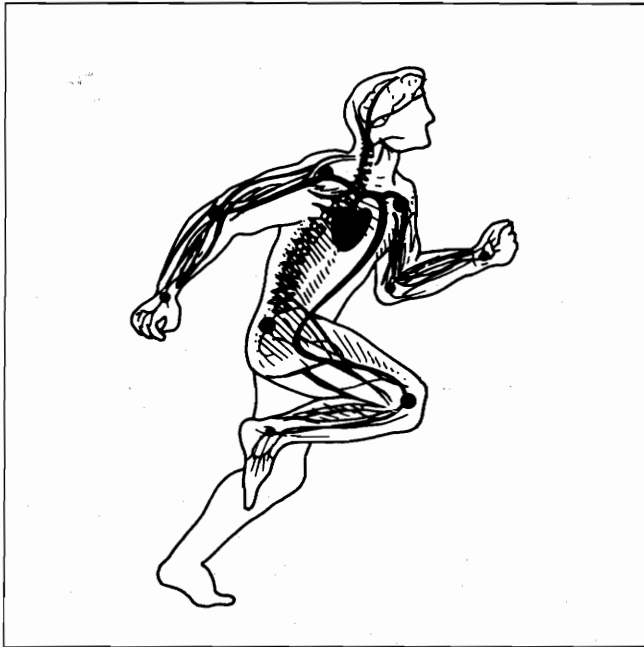


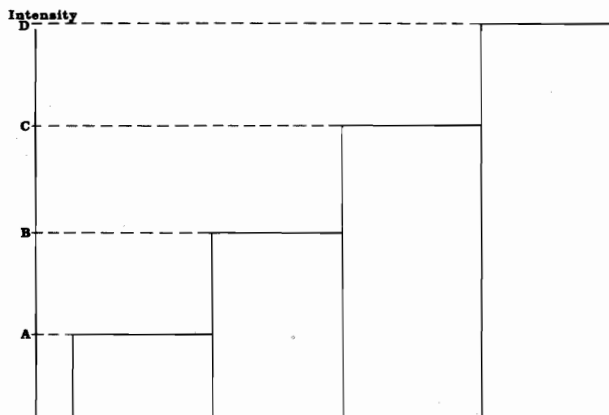
Fig. 66.2

### General advice

Know your body. One might say that like a motorcycle, your body has an engine that demands maintenance, tuning and service. To make your training more effective, you must know how your body is functioning and what happens to it during training or racing.

The training must be adjusted to the individual and not the other way around. We are all different in many ways. Each rider must draw up his own training program, but it must include the following points:

- A. INTERVAL TRAINING** (physical condition).
- B. MUSCLE ENDURANCE TRAINING** (Circle-training)
- C. SPECIAL TRAINING** (riding).



To get improved condition from your training, you need a constant increase in intensity of training, as the body always adjusts to the demands put on it. This also implies that you must not start training too intensely, or with too heavy a load.

Increase your training slowly and step-by-step. Otherwise parts of your body will be overstressed.

Begin each training period with **Warmup exercises** to get ready for training proper, so that you obtain the maximum benefit from it and also to prevent injuries.

**Remember** you are not properly warmed up until

The training must be carried out in a way that demands great lung ventilation and high heart-beat frequency. Many muscle groups are put in dynamic work (the muscle alternately growing longer or shorter through movement).

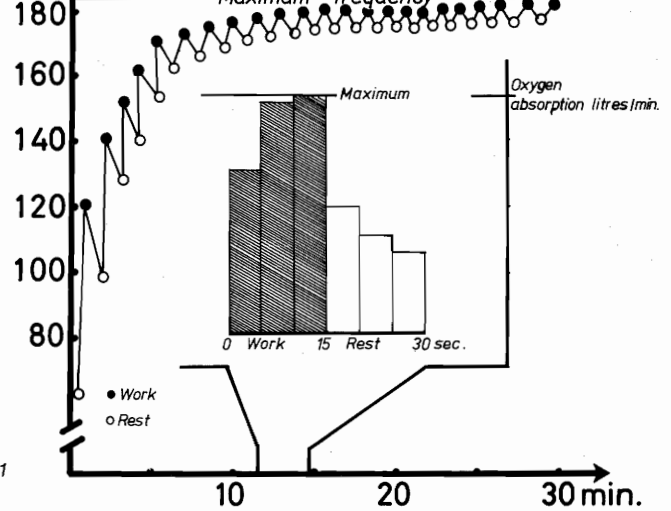
### Short-short intervals

Run 15 seconds, rest 15 seconds, over a period of 20 to 30 minutes.

If the tempo is not too high and/or the rest periods too short, the muscles have a chance to get enough oxygen and hold the lactic acid level down.

Without a watch and good ambition (or a scrupulous coach), it's difficult to carry out this exercise properly.

Fig. 67.1

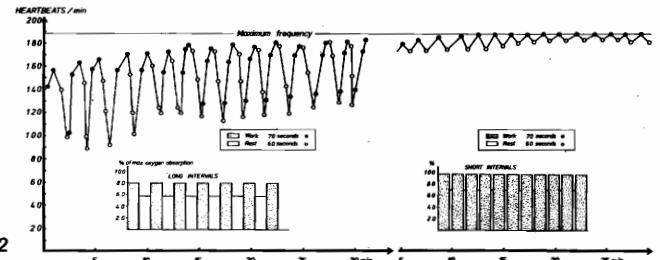


### Short intervals

Run 60 to 90 seconds, rest 20 to 30 seconds, five to nine repetitions.

The rest periods must be within the prescribed limits (See fig. for why).

Fig. 67.2



### Long intervals

Run 2 to 10 minutes, rest 1 to 4 minutes, five to nine repetitions.

Fig. shows effects of four minutes running, two minutes rest. This method (adjusted to your body characteristics) creates maximum demand for oxygenation, but is painful, as you usually choose too high a speed at first.

### 70-20 cross-country intervals

Mark out a cross-country track 200-600 yards long. Run at high speed for 70 seconds. After exactly 70 seconds, rest for exactly 20 seconds, then go into another 70 second sprint. Do this four to eight times. Taken together with the above-described interval training, this method develops the best condition (measured in oxygen absorption liters/minute) in the shortest time.

Fig. 67.3

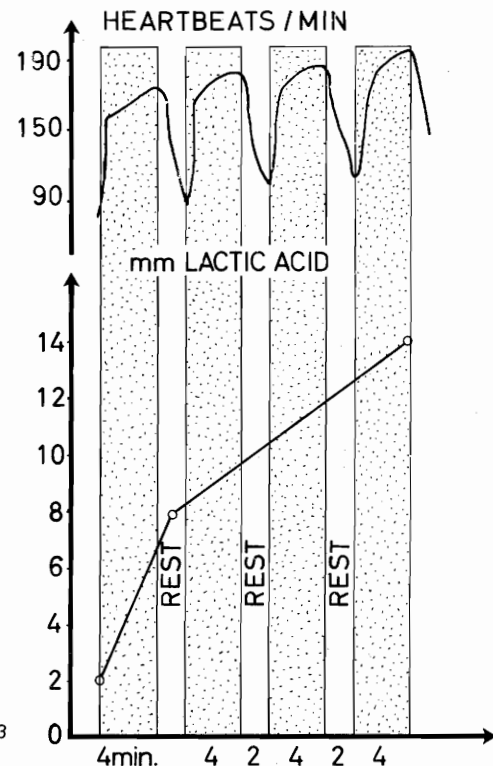




Fig. 68.1

### **2-10 minute cross-country intervals**

Lay out a cross-country circuit of 500-2 000 yards lap length.

Start from point "A" (any convenient place) and run at the highest speed you can keep up during the work period.

Mark where you finished, and go back to "A". Take as much time walking to the start as the work period.

In your next workperiod, you will try to reach the same point on the track as before. If you succeed and go farther, move you mark. If not, try again. Do this three to five times.

### **Sprinting**

This develops speed and muscle strength. Run uphill at maximum speed. 10 to 60 seconds. Walk or limber up while going back downhill. Do this five to ten times.

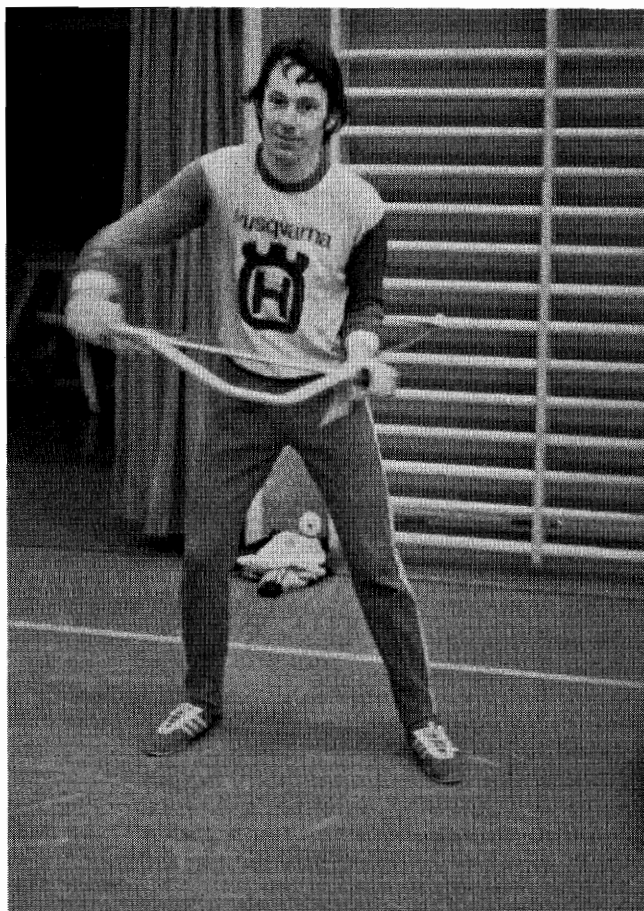


Fig. 68.2

## **B MUSCLE ENDURANCE TRAINING (Circle-training)**

Perhaps you have noticed after a hard ride, some muscles stiffen up and refuse to respond with any precision. This "partial seizure" is due to insufficient oxygen supply and blood flow at the same time as residues of lactic acid and other fatigue substances have accumulated in the muscle.

Therefore the aim of this training is to delay the appearance of these symptoms as long as possible, and to harden your muscles and yourself. This training is the hardest and the cruelest for the rider, as he must force himself to continue even when he feels an intense fatigue and is ready to give up.

Muscle training is also a training of the nerve-muscle function (coordination) and therefore depends on the pattern of movements and contractions used. If you use the wrong exercises, much work will give very little or no effect when riding.

The do-it-yourself method is called "Circletraining". Here is how to do it.

exercise for a separate muscle group. In this example, we have chosen the exercises for you (see fig. 69.1). Again warm up for at least 10 minutes first.

### Maximum test

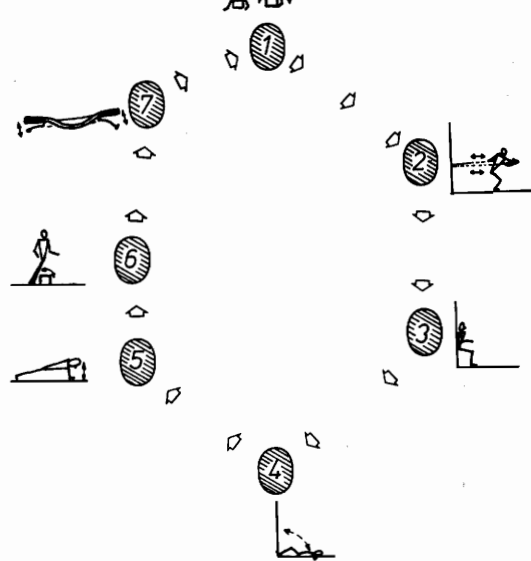
Before you start the real training, you have to do a maximum test to find out what load to use during the following week's training.

Start at station One. Do as many workouts as possible during exactly 60 seconds. (If you are welltrained, 120 seconds.) Rest for 60 (120) seconds, while at the same time you write down the number of workouts you did at Station One, and move to Station Two.

After exactly 60 (120) seconds' rest, you start on Station Two, doing your maximum of that exercise for exactly 60 (120) seconds. Rest as before, writing down the result and move on . . .

When you have completed all the stations you have ten minutes of rest. During that time take your notebook and divide the result from each station by two to get a figure showing your 50 percent capacity for the work period. This is the load you will carry during the following sessions.

Fig. 69.1



1. Jump up and down on a bench or similar object.
2. Anchor a handlebar to wall with strong bungees. Push away with steering motion.
3. Modified "iron chair" — knees at 90°. Put a ball between and squeeze ball with knees.
4. "Sit-ups"
5. "Push-ups"
6. Straddle-jump a bench.
7. Handlebar with spring-loaded levers. Hold bar as you would when riding, pull both levers simultaneously.

### Training

After the rest period, start a stopwatch as you begin at Station One. Now you have to do half of your maximum capacity on each station as fast as possible and without rest between sessions. Three laps of your circle must be completed, after which you stop your watch and record the time in your workbook.

The next day you do the same, but now try to reduce the time for three laps.

After one week with three to five training sessions, you will have reduced the time by 15 to 20%, and it's time for a new maximum test. After this test, you will check your figures against the previous week and notice a 15 to 25% improvement. This should stimulate you to continue the following week, using the new 50% figures derived from the second maximum capacity test. And so on . . .

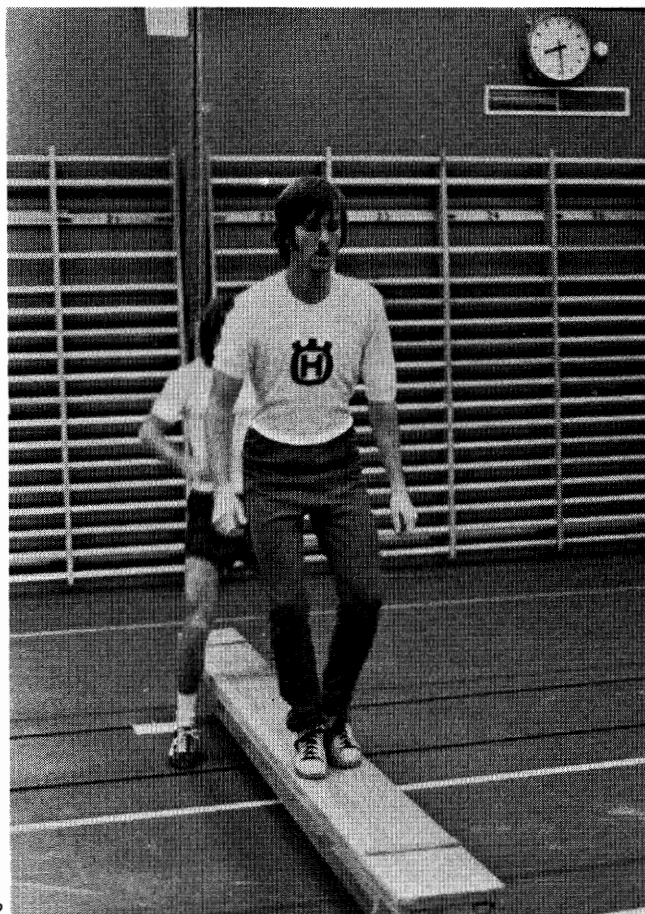


Fig. 69.2



Fig. 70.1



Fig. 70.2



Fig. 70.3



This training is for individuals. You are only competing against yourself, and the intensity of the training increases automatically with the weekly tests.

“Circle Training” is extremely hard, and if beginning or in poor condition, you may have to use fewer stations or work two laps.

### **SPECIAL TRAINING (riding)**

To be a good pianoplayer you need musicality – to be a good tennis player you need ball sense. Independent of natural ability, training implies an improvement of your efficiency. “Special training” means coordinating of movements while riding.

Your aim during this training must be to get a smooth riding technique. With smoothness, you don’t need to work so hard – you can do the work with less energy loss.

Movements and frame of mind affect each other, meaning that impulses coming from your surroundings have a great influence on the functioning of your central nervous system. Your race results will be affected by (for example) temperature, weather conditions, track condition, noise-level, and the influence of your surrounding friends and mechanics.

During practice you may have good command of your techniques, but with competition, spectators, noise, and other stresses have been added. This means that a very important part of your training is real racing. Your goal must be a top placing, no matter what competition you have.

### **TRAINING SCHEDULE**

After the race season is over – put your bike in the garage and forget about it for at least a month or so!

Relax and do all the other things you didn’t do during the season. Go out for a two-mile cross-country run once or twice a week to keep fit.

After a while you will get hungry for a ride again, and now it’s time to begin your preparations for next season. Start to tune-up your body. After a while also include your “special training” by practicing on your bike.

actually starts.

During the season, between races, you also need some training, because racing itself is not enough to keep one really fit during a (compared to other sports) very long season.

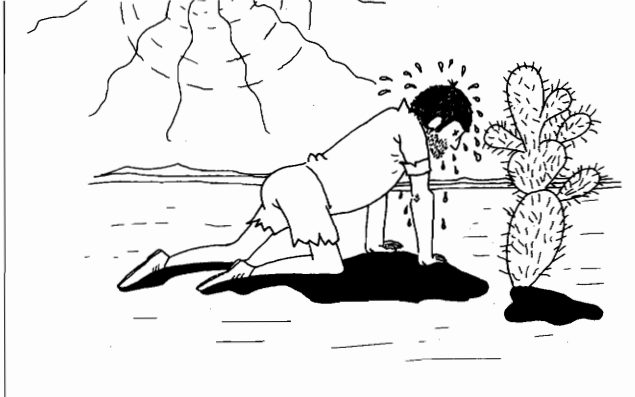


Fig. 71.1

### The body fluid balance

The body is cooled down by perspiration, among other things. Your perspiration can during a motocross race, sweat out at the rate of up to two or three litres/hour depending on how high the outside temperature is and how hard the track makes you work.

This perspiring reduces the body fluid balance. When the body fluid is reduced by two percent of the body weight, physical capacity goes away considerably.

To keep up the capacity you must compensate the liquid loss by drinking enough, so that the weight of the body is kept on a constant level. Otherwise you will tire quickly in the second heat and blow the whole competition.

Therefore, find out how much you lose in weight during a normal race, and afterwards take it as a good rule to drink the same quantity during competition.

Many sportsmen take sugar water, while others have discovered that there is another more suitable special mixed drink to take, namely Gatorade. Gatorade contains just the substance that the body has lost during the work.

Carbonic acid drinks are quite unsuitable.

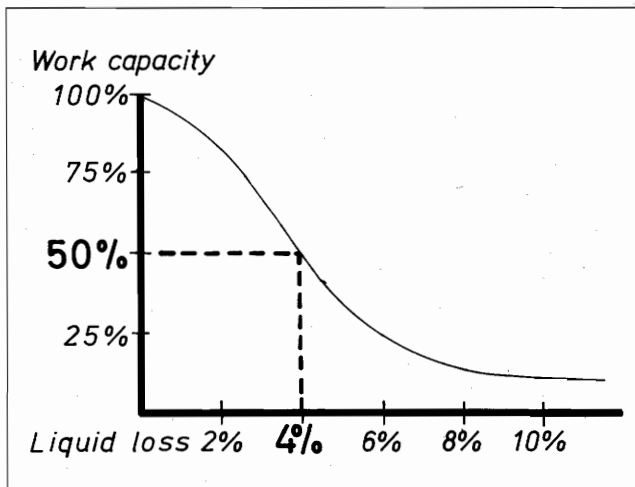


Fig. 71.2

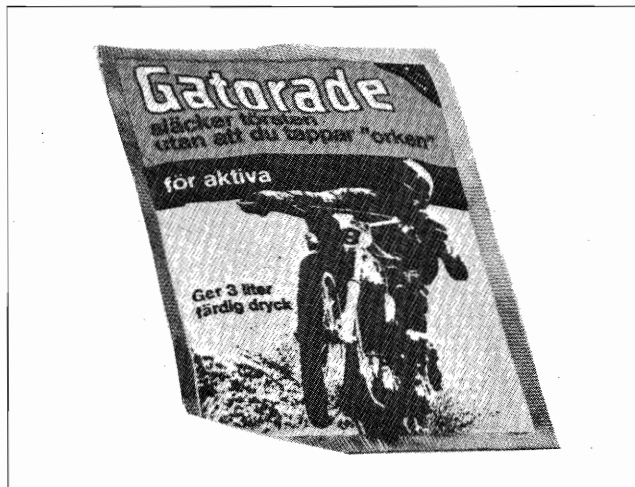


Fig. 71.3



Fig. 72.1

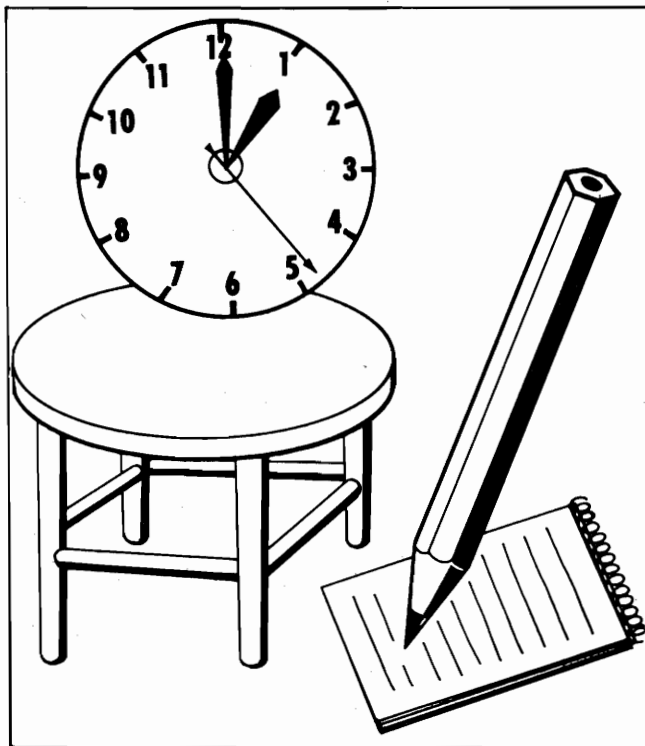
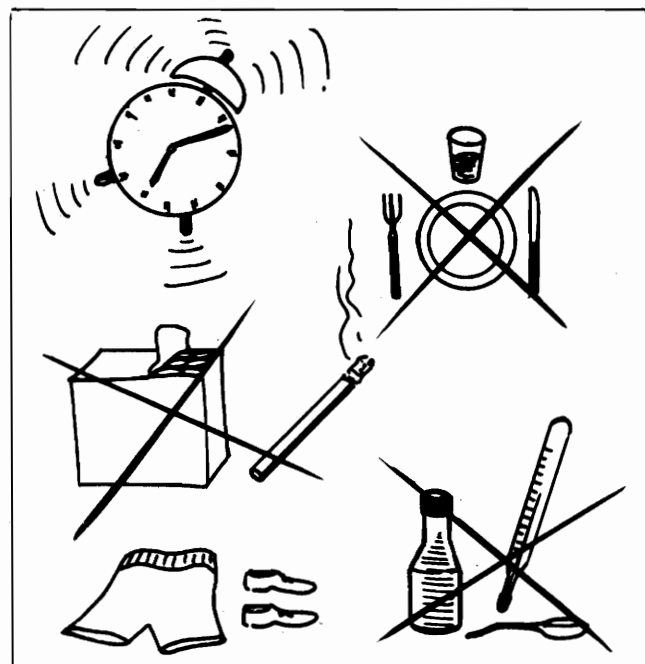


Fig. 72.2



### Testing physical condition

Heart capacity is often the factor determining the ability of persons to perform heavy work for long periods. Measuring heart activity is therefore a fully satisfactory yardstick of maximum work capacity. This test is based on the fact that after a correct program of training the ability to absorb oxygen increases and the pulse rate is slower for the same amount of work. The most common methods of measurement are the ergometer cycle test and the step test. Of these, the step test is the most suitable for the individual motocross rider, since with this simple method it is possible for anybody to test himself without the use of special equipment or instruction.

### General rules for testing

1. You should have slept soundly and be well rested. It is best to carry out the test in the morning.
2. You should not eat anything within two hours before the test.
3. You should not smoke within one hour before the test. (Smoking is not conducive to good physical condition and motocross riders are advised to abstain.)
4. Light clothing should be worn.
5. Do not carry out the test if you are sick.

### Materials

Chair, bench, box or the like about 0,4 m in height. Watch or clock with second hand.

### Work

To carry out a step test, step up and down from the chair continuously for five minutes, each time with the same foot first and at a rate of 30 step-ups and 30 step-downs per minute.

This can be timed in such a way that you are standing on the chair with both feet after the first second, and are back down on the floor with both feet after the second. etc.

Carry out each step-up and step-down with the left foot first.

When standing up on the chair your knees should be straight; your hips slightly thrust forward and your head held high in a relaxed stance. Hold your arms naturally.

It is extremely important to learn these movements correctly from the start, so that the work involved in each test is as identical as possible. This is in order that the results of several tests can be compared.

### Pulse

After five minutes, sit down and rest for precisely one minute. Then take your pulse for 30 seconds. Double the result and make a note on the test sheet. (Best way of feeling your pulse is to lay the flat of your hand against your heart on the left side of your chest or place your fingertips over the carotid artery which you will find just behind the larynx.)



into account the weight of the body, as the body is lifted up each time you step onto the chair. You could also enter the results on a graph (see fig. 66.2) so that you can see at a glance how your physical condition improves.

### INTELLECTUAL CAPACITY

Physical tiredness impairs the capacity of thinking. Therefore a rider in poor physical condition must either ride at a lower speed or else take more risks than a rider with the same competence only in better condition, especially during the later part of the race.

To get the best results a very strong determination to win is demanded as motivation.

Better effort of will gives, as a rule, better results – to a point. Beyond that point, the result will be the opposite. That means I have “over-motivation” which means that I want more than the capacity I have.

The bad results come from the fact that the over-motivated person works too hard and commits his energy reserves too fast.

The spectators often find the over-motivated nonchalant, apathetic, clumsy or ruthless.

Over-motivation can also arise from concentration on difficulties, unfavorable circumstances or bad condition.

To get the right motivation, (a balance between will and results) you must clearly evaluate both yours and the competitors’ and realistically estimate the chances to win.

Your riding tactics should be planned in detail before the start.

Where shall I line up at the start gate? If I win the start, which speed shall I keep?  
Can I keep this tempo all the time?

One of the most important things to keep in mind is that a motocross race is not decided until the finish of the last heat. It’s not only the rider who must manage, also the motorcycle must be able to make the whole distance.

Poor	120	
Fair		
Fairly good	110	
Good		
Very good	90	
Excellent		

Fig. 73.1

1st 2nd 3rd 4th week

### Test sheet

Date	Weight	Pulse	Notes

Fig. 73.2

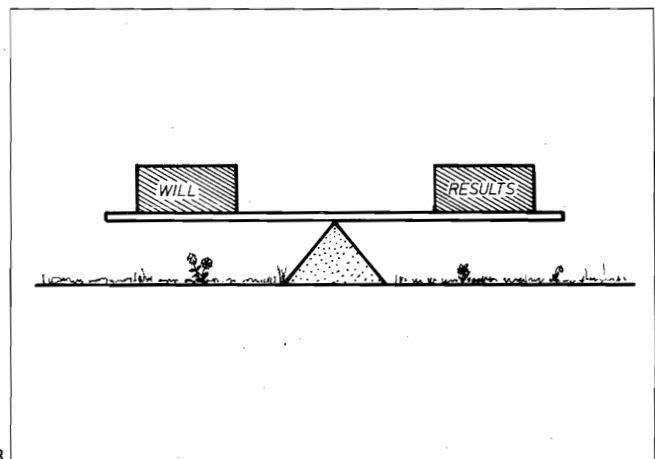


Fig. 73.3

# You and your Husqvarna on the competition circuit

## **Competition practice**

Ride calmly and carefully when making your first practice runs.

Then open up a little more when you know the track conditions better and note the behaviour of the motor cycle.

Ask yourself these questions:

- a) Is ground adhesion as good as it could be? It may be necessary to alter the tyre pressure, or even to fit tyres with a special tread pattern if you have these available.
- b) Is the damping function of the front fork as it should be and are the rear suspension units correctly adjusted for this type of circuit? It might be necessary to adjust the hardness setting of the suspension units and to alter the damping function of the front fork by changing over to another oil viscosity (see under "Repairs and Maintenance").
- c) Is the reduction ratio between the gearbox and rear wheel right for this type of circuit? If you are in any doubt about this, try out another chain sprocket which you think might be more suitable.
- d) Is the carburettor function the best possible for this type of circuit? It might be necessary to alter the needle position or to change the jet.

The above points need clarifying and the necessary action taken during practice.

Do not be put off by tearaway competitors during practice runs but stick to your own tempo.

When you are acquainted with the overall conditions of the track and are satisfied with the function of the motor cycle, make one or two practice runs "flat out". If you find any section of the track particularly difficult, concentrate on this section systematically and take it easy over the rest of the circuit.

## **Competition starting**

Make sure that you are ready to start in good time. Ride effectively during the competition by utilizing all the good properties of the motor cycle to the fullest extent. Run in a suitable gear at all times in order to obtain the maximum possible power from the engine. De-clutch properly when changing gear and operate the gear lever with a firm and steady movement. This avoids the risk of losing time due to fumbled gear changes. Use both brakes for slowing down.

Never ride faster than is within your capacity!

**WE WISH YOU EVERY SUCCESS ON THE COM-**