

PHILOSOPHY, SCIENCE AND PRACTICE OF
MAXALDING 5 - MUSCLE CONTROL
EXERCISES FOR THE THORAX AND BREATHING
TECHNIQUES

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1. MC of the muscles of the thorax

1.1. Preliminary ISR and DSR exercises

The muscles of the thorax are difficult to isolate by any mechanical means. The deep breathing techniques are not necessary and, in fact, they can be very harmful. MC excels as the safest and most effective exercise for this complex area. The benefits that MC produces on health by means of these exercises are very remarkable. You should soon experience an increased breathing capacity and better general endurance. Besides, the performance of MC provides you “full tidal breathing”, the most

relaxing and healthy breathing practice of all.

1.1.1. ISR for *serratus magnus*

The *serratus magnus* muscles are located below the armpits and over the *intercostals*. They are seldom used and they are generally atrophied, but they have an important role in demanding activities, when the body needs a high increase of oxygen volume.

These muscles are relatively difficult to isolate because of a lack of development in most cases. The following exercise is the best for training it.

Place your hands behind your head with the neck erect or slightly bent backwards. Now press the head forwards resisting the movement and keep the position with the elbows pointing to the roof. Be very careful with the amount of tension that you put on the neck. In advanced stages, you should be able to contract the *serratus* muscles with a minimal amount of pressure over the head.

Keep the tension 5-10 breaths and relax.

It is very important to relax completely the abdominal wall for mastering this isolation.

1.1.2. DSR for the *serratus*

Adopt the same position than in Exercise 1.1.1 and bend the upper back slightly and very slowly forwards. Avoid any contraction of the abdominals. You should feel a light tension between the upper ribs.

1.1.3. ISR for the *intercostals*

Place your hands resting over the hips and bend sideways pressing with the hands for 5-10 breaths each side in the position of maximal contraction. Don't tilt your body very much. A little angle is enough.

1.1.4. DSR for the *intercostals*

Adopt the same position than in Exercise 1.1.3, but in this case don't fix the position, but resist with the hands all the motion. Don't tilt your body very much. A little angle is enough (< 30°).

1.1.5. Combined DSR+AMR exercise for back and *intercostals* development

Perform the exercise 10.1.6 of **Part 3** contracting powerfully the *intercostals* all the time.

This exercise can be performed in a DMC way in advanced stages with better performance.

1.1.6. DSR lifting

The Exercises 1.1.3 and 1.1.4 of Part 4 can work powerfully the *serratus* and the *intercostals*, if you concentrate in these areas.

1.1.7. ISR for the *pectorals*

You can distinguish three pectoral zones: lower, medium and upper. All these areas should be worked with the same intensity. This is the reason for the relatively large number of positions in this case.

Exercise 1. Grasp your hands in front of your chest with arms semiflexed. Press inwards powerfully (without strain), keep the tension 5-10 breathings and relax.

Exercise 2. Grasp your hands in front of your chest with arms semiflexed. Pull outwards powerfully (without strain), keep the tension 5-10 breathings and relax.

Exercise 3. Grasp your hands in front of your abdomen with arms semiflexed. Press inwards powerfully (without strain), keep the tension 5-10 breathings and relax.

Exercise 4. Grasp your hands in front of your abdomen with arms semiflexed. Pull outwards powerfully (without strain), keep the tension 5-10 breathings

and relax.

Exercise 5. Stretch your arms to both sides of the body and try to touch both hands while you press firmly the arms against the *pectorals*. You may need to bend your shoulders forward as far as you can. Contract the whole *pectorals*, count 5-10 breaths and relax. Be careful and increase the tension slowly, because in this position, the *pectorals* are prone to some cramping.

1.1.8. DSR exercises for the *pectorals*

Exercise 1. Assume the position of Exercise 3 of 1.1.7 and raise your arms over head while you inhale, keeping the inwards tension all time. Lower your arms from top to bottom position while you are exhaling with the same tension. Repeat 5 times and relax.

Women should begin the motion from the position of Exercise 1 of 1.1.7 because this contribute to an improvement of the natural shape of the breasts. The whole movement from top to bottom produces a muscular and masculine shape, but the half movement from chest to top generates the development of the upper section of the *pectorals*, giving a pleasant feminine shape.

Exercise 2. Assume the position of Exercise 4 of 1.1.7 and raise your arms over head while you inhale, keeping the outwards tension all time. Lower your arms from top to bottom position while you are exhaling with the same tension. Repeat 5 times and relax.

Women should begin the motion from the position of Exercise 1 of 1.1.7 because this contribute to an improvement of the natural shape of the

breasts.

1.1.9. Pectoral stretching

Exercise 1. Interlace your hands behind the lower back. Stretch your arms downwards and bring your shoulders backwards as far as you can. Contract the pectorals in this position for 5-10 breathings and relax.

Exercise 2. Stretch your arms backwards forming an angle of about 45° with the vertical line. Try to put together both arms. You should feel an intense stretching of the pectorals. Be careful with this exercise and don't force the position. Keep the stretch for 5-10 breathings and relax.

The pectoral stretching must be performed after the MC pectoral exercises.

1.2. AMR exercises for the thorax

Now, we know the differences between AMR and DMC (dynamic muscle control, see **Part 4**), so the exercises I shall describe should not imply antagonistic action any more. I shall explain them after the isolated voluntary controls.

1.3. BL exercises for the thorax

In this section I will study only individual exercises. The combined exercises, much more productive and funny, will be analysed in next articles.

1.3.1. Push ups

This is the key exercise for thorax development. This exercise can be done very progressively, from beginners to very advanced athletes.

Progression:

1. Stand erect in front of a wall with arms stretched in front of you at chest height. Bend your arms as far as you touch the wall with your chest. Try to keep the body as straight as you can all the way. Repeat 1-5 times and relax. Synchronize your motions with your breaths. Inspire during raising and expire during lowering. Do the lowering motion as slow as you can.
2. Lie prone on the floor with your body weight supported by the knees and the hands with arms stretched. Try to lower the body, keeping the back straight, and raise again. Avoid any kind of jerky motions. Repeat 1-5 times and relax.
3. Lie prone on the floor with your body weight evenly distributed among your hands and your toes with the body completely straight. With arms stretched at shoulder width, lower your body as far as you touch slightly the floor with your chest, but without resting your weight. Raise again very slowly, if you want to develop strength, or as quick as you can with perfect form (almost bouncing), if you want to increase power, and repeat 1-5 times.
4. Do the same than in (3), but now tilt your body to one side all the way as far as you can in order to overload each arm alternatively. When you have performed 1 rep, turn to the other arm and repeat. Do 1-5 reps with each arm and relax.
5. Application of Pullum's method of progression (slow + quick) for fixed resistance. Do a very slow (5-10 breaths per rep) tilted push up (4) with each arm without rest. Immediately do 5 reps of normal push

ups with the weight evenly distributed. Do 1-5 reps and relax. This is a demanding exercise.

6. The same than (5), but in this case, do 5 quick alternating reps with the weight tilted alternatively. This is a kind of slow + quick upper body wave movement.
7. If you are able to do the above variation, you can try the one arm push up. Adopt the position (6) but now open your legs as far as they form an angle between 45° and 90°. Raise one arm and rest it in the leg or behind the back. Press firmly with the other arm and try to descend slowly as far as you can. Try to touch the floor without resting and elevate yourself again. Do 1-5 reps. This is a very advanced exercise and should be performed only for testing purposes and not for daily training, because it is very demanding for the joints.
8. One arm one leg push up. Do (7) while you raise the leg of the same side than the working arm. This exercise demands a lot of strength, skill and balance.
9. You can make (8) harder trying to move closer your legs, decreasing the angle between them.
10. Apply the Pullum's method to (9).

The following exercises are of a hand balancing kind. They are not absolutely necessary for strength development, because they are very skilful, demanding and stressing, but they produce very good results. They should not be practised daily, except if you are a gymnast. I will not describe here, because they are not strict Maxalding exercises and I do not practise them.

1. Frog stance.
2. Frog push up.
3. Planche.
4. Planche push up.
5. One hand planche stance.
6. Alligator walk.

1.3.2. Raising from prone position

This is a kind of push up which begins with a prone cross position and ends in a normal push up posture.

This is a very advanced exercise and one of the best for pectoral strength, mass development, definition, and endurance.

Adopt a prone position with arms stretched to both sides in a cross form. Raise slightly your shoulders in order to be able to press firmly the floor with your palms. Now, press firmly and explosively against the floor and raise your body. You will probably achieve a posture between the initial one and the normal push up. Keep your body straight all the time, this is very important. After this, progress slowly to the normal push up position in little steps.

Progression:

1. When you are in top position, try to return to initial one in little steps, very slowly.
2. Avoid any sliding of hands. The sliding is not safe and makes the exercise less demanding in general.
3. Do 1-5 reps of the exercise, both raising and lowering without rest.

It is not necessary to do many reps of the advanced exercises if you care for perfect form and control. Remember

always the energy conservation advice.

2. Isolation of the muscles of the thorax

2.1. *Serratus magnus*

The pure voluntary isolation of these muscles are difficult, but it deserves careful attention because of its effects over general endurance and because it is a very nice and impressive control.

Adopt the position of Exercise 1.1.1 and try to reduce progressively the hand pressure on the back of the head. Concentrate in the upper ribcage in this position, feel the tension and intensify it. You will discover how much strong can be this contraction in advanced stages if you practice this control with patience.

The best method to reduce the mechanical assistance in any control is the following:

1. Adopt the isolation position and perform the exercise keeping maximal (without vibrating or strain) contraction for 3-5 breaths.
2. Try to reduce the amount of mechanical tension a few, compensating it with definite mental contraction, and keep this contraction during 1 breath. Don't rest in between, this is very important in order to teach the body how to isolate voluntarily the muscle. If you rest between steps (1) and (2), your mind would find very difficult to learn the mental isolation.
3. Repeat the step (2) 1-5 times trying to decrease the mechanical tension progressively with each breath, but

keeping the same level of contraction mentally. Master this technique until you are able to eliminate completely the hand pressure.

The difficult point here is to avoid any parasite contraction of the abdominals. If the abdomen is contracted, this can inhibit the isolation of the *serratus*. Try to relax also the *intercostals*, it is not very difficult if you have relaxed previously the abdomen.

Apply the Pullum's progression method to this control when you master the isolation and repeat 2-3 times. Relax very consciously these muscles after the performance and never strain them because they can displace the ribs to some extent.

2.2. *Intercostals*

This is one of the controls about which Maxick said "it is easier to do than to explain".

The mechanical control is very easy, because you can feel the tension simply tilting your body to one side. Once you have the mechanical tension, you must try to increase it by means of mental concentration.

The aforementioned method is very easy, but it is not optimal, because it implies a crushing of the muscles between the ribs. This is peak contraction, but not pure MC. Besides, in this position, the *intercostals* are not shown in their most beautiful appearance.

Put one hand resting, without any pressure, on head with arm semiflexed and the elbow pointing in front. Now tilt slightly to the same side than the flexed arm and turn your torso to the opposite

2. Isolation of the muscles of the thorax

side slowly as far as you feel the maximal contraction and a clear separation of the muscles. Sometimes a slight raising of the corresponding hip can help the contraction. This was one of the most impressive Maxick's poses.

The pure voluntary control is achieved reducing progressively the tilting and turning angles of the thorax and keeping the tension level. Finally, you should be able to contract very powerfully the *intercostals* in a neutral erect position. Very frequently a strong contraction in this area tend to contract very intensely the upper section of the *rectus abdominis*. Try to relax this spurious tension as far as you can, because this isolation between *intercostals* and abdominal muscles can be very important in the performance of advanced controls, for example, if you want to isolate only one side.

Extreme MC for the intercostals.

The final aim of MC of the *intercostals* would be the effective isolation of each section of the intercostals. There are *internal* and *external intercostals*. They are very difficult to feel separately. This can be achieved applying the FTMCR technique. In low and medium tension levels, the muscles that contract are generally the external ones. If you increase your tension remarkably, you can feel the subsequent powerful contraction of the internal layers, that are able to “change” the shape of the rib cage.

I have had some very limited success with the isolation of each individual *intercostal muscle*. The use of AMC (analytical muscle control) is fundamental. It is easier to contract first

the lower *intercostals* and relax the upper ones, but the complete isolation of a single *intercostal* between the surrounding ones demands far more dedication and patience than most controls and it can be considered a real challenge in Maxalding. I do not know if such isolation is even physiologically possible, because there are not references about it. It seems that nobody tried it. In spite of this, I shall make a great effort to master this kind of control, if it is possible, in order to explain it in future writings.

A very important advice, never strain yourself trying to perform the *intercostal* controls, because you can sprain or tear some tissues. This happen generally when you do not relax properly the abdomen and its contraction reinforces the effect over the ribs.

2.3. Pectorals

The progressive isolation of the *pectorals* is achieved by means of a decreasing in the amount of self-resistance tension applied in Exercises 1.1.7. You should keep the tension with mental concentration only without hand or arm pressure. Apply the optimal method explained in Section 2.1.

The pure voluntary control of the *pectorals* is mastered in one of the less favourable positions for the contraction of these muscles¹. Stand erect with the back slightly rounded forward and keep your arms stretched to both sides in a crucifix position with palms facing

¹ This is a clear proof of the differences between real MC and peak contraction. MC pursues the absolute control in *all possible positions and motion angles of each individual muscle*, including the less favourable ones for contraction.

forward. Now try to contract the *pectorals* without moving the arms.

This control can be difficult in spite of the mastering of the other pectoral contractions. One progression method to achieve it is the following.

Perform the Exercise 5 of 1.1.7 and open your arms to the sides very slowly trying to keep the tension all the time as far as you reach the crucifix position. In the first performances probably you will not be able to keep the tension in the wider posture, but be patient and practice it with full concentration.

This exercise can be turned into a pure DMC exercise in this way. Stretch your arms in front of you with touching palms at chest level. Contract powerfully your *pectorals* and open your arms slowly to both sides keeping the arms stretched and the tension uniform as far as you adopt a crucifix position. Inhale in this phase. Now, return to the initial position in the same manner while you are exhaling.

You can practice this pectoral DMC lying prone over the floor or you can apply it to Exercise 1.3.2 in a SMCR fashion.

Be very careful relaxing the back muscles in order to isolate the action of the *pectorals* from the contraction of the *latissimus dorsi*.

3. Breathing techniques

There are a lot of controversial opinions about breathing techniques in Physical Culture. Some authors opine that everybody possesses a “natural” form of breathing and that it is

unnecessary to teach any improvement of this. This was the Strongfort's statement. This neutral breathing is not really dangerous and it have sense to some extent, but it is not the best.

Many physical culturists, like Liederman and Macfadden, advocated “deep breathing” exercises in order to increase the lung power and capacity. Such practices are unnecessary in most cases and they can be very harmful in some people who force and strain the thorax trying to increase its circumference.

Finally, there are some “experts”, generally influenced by some oriental practices, that recommend the so called “abdominal breathing” without a clear understanding of the body functions or confuse it with diaphragmatic breathing. The inhalation and exhalation by means of the forcing of abdominal muscles, like the *rectus abdominis*, is very detrimental and defeats the purpose of improving breathing and blood oxygenation. This kind of breathing is known by the “potty belly” form that the abdomen shows during the inhalation.

The only healthy and natural kind of breathing is diaphragmatic breathing, called in Maxalding, “full tidal breathing”. When you see the breaths of a sleeping baby, you see full tidal breathing. The baby only expands its rib cage in all directions forming a slight natural vacuum in the abdomen during exhalation. There is not any swelling of the abdomen. In many cases, the quick and powerful rhythmic action of the diaphragm muscle is clearly visible.

Monte Saldo cared a lot about the correct performance and teaching of diaphragmatic breathing, because this

represents one of the key points of the Maxalding system.

The texts and explanations are very clear, but we should not be worried about thinking all time about the correctness of your breathing technique. In fact, one of the most marvellous effects of MC over health is the automatic improvement in posture, breathing and digestion. The thorax exercises shown in this article are able to develop diaphragmatic breathing by themselves.

Controversy has waxed fast and furious between advocates of different methods of breathing, whereas there should only be one kind of breathing, and that is FULL TIDAL BREATHING. When the newly born child takes its first breath, it inspires an approximation of one hundred cubic inches of air, and retains it throughout life². This is known as the residual capacity, and although constantly changed it can never be expelled from the lungs. The air that is inspired and expired completing what is called respiration, is known as the TIDAL AIR. To a certain degree, respiration is an involuntary function, continuing as it does throughout sleep or coma. But voluntary assistance can be given with great benefit to the health, because the tidal breathing may thereby be considerably increased in capacity. A master of full tidal breathing can breathe to suit all and sundry, including singing masters, who think it necessary to teach their students to force their stomachs out in form of a balloon, and misname it the diaphragm. Full tidal

2 Obviously, the same air that we first inhaled is not retained, because air is diluted with each breath. Saldo refers to the almost fixed air capacity that we cannot exhale.

breathing is essential to the development of full potential energy. The average person is unfortunately a shallow breather, and often a mouth breather, particularly during sleep. A Maxalding breather is a deep-breather and a nose-breather³. He cannot help himself, for a mastery of Exercises 1, 2, 3 and 7 of Maxalding builds up the intercostal (between ribs) muscles, and makes a full volume of air simple to inspire. A shallow breather is often anaemic for his blood is not relieved thoroughly of the waste products, nor is it sufficiently oxygenated in its passage through the lungs. The inspiration and the expiration should both take place through the nostrils.

In reply to gentlemen who have so far shown their ignorance as to refer to deep-breathing as nonsense, and who argue that the time to breathe deeply is after exercise or strenuous exertion. I would point out that if you have not previously loosened and made supple the muscles surrounding and enclosing the thorax, as well as the intercostal muscles you will not be able to breathe deeply after exertion, and the result will be breathlessness and distress. This will be caused by the heart vainly struggling to get an adequate supply of oxygen from the lungs to cope with the additional blood circulation. The right and inelastic thorax does not allow the lungs to expand and the respirations become more forced and frequent, and the heart-beats become more frequent also until actual palpitation results. If the strain is kept out, collapse will

3 The Maxalding deep-breathing should not be confused with “deep breathing” exercises, which generally force unnaturally the rib cage in order to increase the thorax volume.

follow. Heart exhaustion and the actual organic disease may result from much repetition of this sort of thing, and even if the heart can stand up to it for a time, it cannot do so indefinitely. That it is why it is uncommon to find a person over forty years of age with a normal and sound heart. Upon exertion, therefore, anticipate the demands of that are going to be made in the way of oxygen, and increase your respiration to its full potential limit without strain. This precaution will prevent the heart from thumping and palpitating.

Then there is a man who tells you only to breathe abdominally. A good answer will be to advise him only to use one eye for reading. His pet argument is that if you inspire deeply, the lungs will become emphysematous, but the fact that the worst sufferers of emphysema are people who perform upon wind instruments, and the prolonged and unnatural resistance to expiration causes a loss of elasticity in the walls of the pulmonary alveoli, is a complete exposure of the fallacy of such an argument. People who suffer with chronic coughs often become similarly affected.

Then it is quite reasonable to suppose that full tidal breathing can be carried out in the same intelligent and sensible way as other functions. Because a person has the wisdom to use the whole of the lungs that Nature has supplied with him, he need not go black in the face over it.

Besides, as has already been pointed out earlier in the book, Maxalding lung-capacity is not gained by forced deep breathing, but by the use of ingenious exercises, such as Exercise 2, wherein

by a simple manipulation, the shoulder blades are used as a pair of hands might be, to stretch and loosen the muscles surrounding the thorax. So effective is this thoracic movement -independently of the lungs- that Maxalding is used with great benefit by persons suffering from emphysema, because the action of the lungs can be replaced to a considerable extent by the voluntary expansion and contraction of the thorax. Air can thus be drawn into -and expelled from- the lungs, in appreciable volume.

All opinions can be speedily settled as to the relative merits of Maxalding and other methods upon the respiration, by testing the lung capacity immediately before beginning Maxalding and then three months later. It is, of course, assumed that the student would have previously been using another method if the test could be considered fair to other methods.

A common cause of mouth breathing is the deadly and disgusting nasal catarrh. One of the several essentials for the cure of nasal catarrh is nasal respiration. Another important essential is pure air, even though it be cold air. All persons who work in fumes or dust-laden air should use a nasal respirator or handkerchief tied across the face, and the mouth should be kept closed.

Nasal irrigation can safely be carried out at home, but nothing stronger than warm salt water should be used. Under no circumstances should any douche, syringe or other instrument be used unless under direct Medical instruction. Two teaspoonfuls of salt to a pint of water at blood heat will be correct as to dilution and temperature. First cleanse the nasal cavities by sniffing the liquid

3. Breathing techniques

up the nostrils and then expelling it again. Then close one nostril with the finger, and draw the solution up the other nostril and expel it through the mouth. Treat the other nostril in exactly the same way. This operation should be carried out before food is taken, and not on a full stomach, as it is apt to cause retching at first. If there is severe internal irritation in the nasal cavities, this can be allayed by the insertion of a small quantity of refined vaseline very carefully into the nostrils, which should then be worked up into the passages by closing the nostrils with the thumb and forefinger of one hand and using the thumb and forefinger of the other hand to coax the vaseline upward, by employing a gentle squeezing movement. For a few days this treatment may make nasal breathing more difficult, but when this preliminary condition passes off, permanent benefit will be experienced.

When there is not catarrh and the passage of air through the nostrils is free, the only treatment required is the full tidal breathing, unless the work is of a nature that makes the inhalation of irritating matter compulsory. In that case occasional treatment as above will be necessary. It may be added that at no part of the proceeding should force be employed, and if any exceptional irritation be experienced, the treatment should be discontinued occasionally to give the membranes rest.

(THE MAXALDING BOOK, Monte Saldo)

Full tidal breathing, as the term implies, indicates the full use of the organs of respiration. Deep breathing as generally taught and understood, involves a full, or even a forced, inspiration of the breath, which is not

necessarily deep breathing. It may actually be shallow breathing. The ridiculous method of holding the body erect with the chest pushed out like a pouter-pigeon, is unpleasant and exhausting, and will even cause dizziness and actual fainting.

(NATURE'S WAY TO HEALTH, Monte Saldo)

Mere chest suppleness alone will not give endurance. The actual muscles that work in expansion and deflation of the chest must be well developed, toned and strong[...]. Maxalding develops all the muscles connected with the function of breathing together with maximum mobilization of the rib-box. In this way resistance to respiratory disorders is increased and real stamina acquired.

(Maxalding brochure, Court Saldo)

In spite of a good deal of controversy between advocates of different forms of breathing, all intelligent persons know that there are only one normally correct form of breathing, and that is **full-tidal breathing**. There is the specialized **anti-rhythmic breathing** for running and another strenuous forms of physical activity, which will be explained and described presently. Holding of the breath is also necessary during certain physical efforts, and a form of breathing wherein sudden inhalations are taken via the mouth is necessary in certain swimming strokes. But the correct form of breathing for ordinary occasions is full-tidal breathing, and so that there will be no doubt in the mind of the reader, I will go fully into the subject as far as a layman is able to do so, and then you can convince yourself by actual test that my advice is sound, technically accurate, and free of all prejudice and bias.

Let me first deal with the simple mechanics of the respiration. They are approximately as follows. The lungs are normally in a semi-distended state in the air-tight thorax, the cavity of which they, together with the heart and other organs, completely fill. By the contraction of certain muscles the capacity of the thorax is enlarged, and this causes the air to enter the lungs via the windpipe. This constitutes inspiration. Upon the relaxation of the same muscles and by the elasticity of certain muscles of the chest walls, aided by the contraction of certain (possibly involuntary) muscles, the thorax resumes its original size, and thus the air is expelled from the lungs. This constitutes expiration. In normal breathing the thorax never reaches its maximum expansion or contraction, but in laboured respiration brought on by exertion, or controlled respiration brought about by a voluntary increased contraction of the respiratory muscles and the pulling down of the diaphragm, maximum inspiration can be attained, while a reversal of the process establishes maximum expiration.

The raising of the chest by the elevation of the ribs is a more complex matter than the descent of the diaphragm, and is achieved principally through the medium of the external intercostal (between rib) muscles and the serratus magnus muscle. The former enlarge the the spaces between the ribs, and the latter -as it passes from the shoulder blade to the middle of the first eight or nine ribs, raises the ribs when the shoulders are fixed, and is therefore the most important muscle of inspiration. Here I must digress for a moment to point out that the usual belief

that very supple and slim persons have the best breathing capacity is fallacious. It is such people that are usually physically weak and victims of pulmonary troubles. The better the bulk and the development of the respiratory muscles, the greater will be the rib separation be when the impulse of the inspiration is active. So, while suppleness is an essential to full tidal breathing, it is not the only essential, and those desirous of gaining superlative endurance should master the control exercises of full shoulder blade expansion, and those exercises that isolate and develop the serratus magnus muscle, as an indispensable foundation.

We are told that when the new-born infant takes its first breath it inspires an approximation of one hundred cubic inches of air. This is known as the residual capacity, and although constantly changed during respiration, the lungs can never be emptied of air during life.

Breathing is an involuntary function, continuing as it does throughout sleep and coma, but voluntary acceleration and increased capacity can be made with benefit to the health and a great saving of work to the heart under strenuous activity, as you will be able to prove to your own satisfaction if not already convinced of the fact.

Before dealing with breath control it may be necessary once more the two main fallacies that seem to be trotted out on every possible occasion by self-styled physical training experts, who always seem to be able to get limitless space in the Press⁴. The first is the ridiculous

⁴ I have always wondered why Maxalding and MC were discriminated and discredited in

advice to inhale through the nose and exhale through the mouth. The so-called experts want us to go about looking like fish. If this were the natural method of breathing we would see babies opening and closing their mouths every few seconds. Except under stress, respiration should be absolutely nasal. Under the stress of great physical exertion some persons find themselves unable to inspire sufficient air through the nose, and then only is there a proper reason to mouth breathing. Mouth breathing is often used by runners for this reason, and not because it is the correct way to breathe⁵.

The other fallacy is that we should breathe "abdominally." Not one, but many writers who ought to know better state that thoracic breathing is wrong, and that abdominal breathing is the natural method. Do they think that the lungs reside in the abdominal cavity? They even try to convince us that the greater tidal capacity is gained by this

many Physical Culture publications, even by MC "experts" (as nowadays is still forgotten and discredited). This fact is absolutely unreasonable, because all old time athletes admitted their admiration for Maxick and Monte Saldo. After careful research, the only explanation I find for this amazing contradiction must be in the clear condemnation that both founders of Maxalding made throughout their whole life of some well established and dangerous training practices advocated by many physical teachers of that time (and, unfortunately, this time also).

- 5 In first stages of Maxalding you can find difficult to exhale through the nose, instead of the mouth, while you are performing the exercises. But, if you practice complete nasal breathing for some weeks, you should observe an improvement in breathing and endurance. Full tidal (nasal) breathing is extremely good for the health.

so-called abdominal breathing. I suggest that some of this gentlemen, all of whom seem to show a bulge where the waist line should be, advocate this distension of the abdominal wall at the completion of inspiration as an excuse of their own unfitness.

First let us consider the effect of the abdominal organs by this downward pressure. The organs are displaced downwards some twenty times each minute, and an actual situation of enteroptosis is created⁶. But even if we ignore the danger of this form of breathing, and come to the question of tidal capacity, we find that this form of breathing inhibits full inspiration. You can prove it for yourself in this way. Keep the chest flat and fixed as advised by advocates of the so-called abdominal breathing and inspire the breath until you can get no more air into the lungs. You will find that the abdominal wall curve outwards in a greater or lesser degree, according to your physical condition. Then, after full inspiration has been accomplished in this definitely bad position, lift the chest and continue the inspiration until you have again completed the inspiration.

You will find that two things have defeated the argument of the abdominal breathers. The first is that you can take in a greater volume of air, and the second is that the abdominal distension has practically disappeared. You will further find that if the thorax is fully expanded, and you have taken in your limit of air, the abdomen will not distend appreciably. This proves definitely that the so-called abdominal breathing is

- 6 **Enteroptosis:** An abnormally downward position of the intestines in the abdominal cavity.

completely useless, and any person capable of understanding the effect of downward pressure on the abdominal organs will understand also that Nature would hardly enforce a displacement of the internal organs under the natural exertion of running, with the necessity of an increased supply of air. Did you ever see a racehorse or greyhound bulging like a balloon when racing? The "abdominal" breathing and other age-old fallacies have to be contradicted and fought all the time, because for some unfathomable reason, the more obviously foolish such fallacies are, the more honour they seem to bring to their supporters. You can now prove otherwise and so help in the fight against a dangerous and out-of-date superstition⁷. It is best not to waste time arguing about it, but to prove by practical demonstration that you are right. If the danger were only confined to athleticism, that would be quite so bad, but the forced inhibition of chest breathing is a potent cause of tuberculosis and susceptibility to pneumonia, for a fixed thorax prevents a proper clearance of the lungs⁸.

How to use full-tidal breathing

- 1. INSPIRATION. Allow the impulse of inspiration to have its way as long as possible. Allow the ribs to expand in all directions and not merely forward and upward, but*

⁷ Unfortunately, these out-of-date superstitions persist nowadays. It is my duty to go on fighting against them. I hope these articles can contribute to continue the work of Maxick and Saldo.

⁸ The abdominal breathing practices are not the direct cause of these diseases, for they are caused by infectious bacteria, but it is true that the detrimental effects of such respiration on the lungs can predispose to infections.

allow the chest to raise just as much as it will as well. Adopt any position that allows more air to enter the lungs, even to the raising of the shoulders slightly. Do not inhibit any slight expansion of the abdominal wall after the thorax has gained full expansion. Although in a fit person the abdominal expansion will be almost negligible, the diaphragm does exert a slight downward pressure on the abdominal viscera. If the abdominal wall is contracted it is possible that the inspiration might be slightly reduced, and in any strenuous activity every cubic inch of air is of value. All athletic contestants must be sure that their costumes do not restrict the breathing or cause any pressure above the navel. It is not even sufficient for a boxer that his second takes the strain off the elastic band of his shorts only during the rest between rounds. A boxer should be free of any such pressure throughout a contest. This may seem to labour an unnecessary point in view of my condemnation of the so-called abdominal breathing, but I would point out that a tired performer is not likely to get proper thoracic movement while collapsed in a chair or on a stool, and the inhibition of the slight abdominal movement would, under the circumstances, be inadvisable. We must realize, too, that a fit man in fighting form has refined and well-toned abdominal organs and correctly conditioned abdominal wall. This would ensure no harm

accruing from the slight and temporary pressure that would be exerted on healthy abdominal organs under such conditions. Similar conditions apply to the runner or follower of any sport that involves the kind of exertion demanding generous blood-oxygenation.

2. *EXPIRATION.* At the completion of the full potential inspiration allow the air to escape as easily as possible by allowing the chest to collapse and the abdomen to depress. Thus you will reduce the residual capacity and increase the tidal capacity, and in so doing eliminate poisons more speedily from the blood, and correspondingly increase potential blood-oxygenation during the inspiration that follows. The expiration must be carried out smoothly and rhythmically, and not as a series of exercises as this dissection might cause one to believe. It might be well at this juncture to remind the reader of the important fact that if respiration can be increased to correspond to the requirements of the physical effort, fatigue will be delayed and the heart will not be overworked. So the runner especially is advised to use full-tidal breathing voluntarily, and even anti-rhythmic breathing, which will be now described.

Anti-rhythmic breathing

This method of breathing can be used effectively and mechanically during all running except the short sprint, and it can be used on the sports field during

any game, and especially during those movements when one is out of play, as frequently occurs during Soccer, Rugger, Hockey and so on. Let me give you a preliminary warning at this point. The old doddering die-hards will recoil with horror at anything so irrelevant in sports as a new method of breathing. Which reminds me of one critic of running, who, on hearing the term "anti-rhythmic breathing", condemned it instantly as "dot-and-dash" breathing, and in the same article stated that a contestant in the 100 yards sprint should hold the breath for exactly 60 yards. Why exactly sixty yards was not explained, but of this anon. Let me say here that certain champions runners **are** using this method, and if **you** use it you will prove by yourself what aid it is to endurance, and the prevention of leg-weariness, heart palpitation and general distress. It is not a **normal** means of breathing, but it is natural in so far as the intelligent athlete can use the voluntary powers with which Nature has endowed him to combat fatigue and distress.

Is it natural for the breath to be held during sprinting? I think it is, for reasons that every sprinter proves for himself, and which will be explained later in this book.

Now let us study the effect of rhythmic breathing, with the object of showing the reason of anti-rhythmic breathing. When the respiration is rhythmic, identical periods are occupied in the inspiration and expiration of the breath. It follows therefore, that it takes a long for the poisons to be expelled from the lungs as for the clear air to enter. The object of anti-rhythmic respiration is to shorten the period of expiration and thus

allow more time for the periods of inspiration. Consequently it must be obvious that a speedier of the air creates a dual advantage. The first advantage is that poisons must be more speedily eliminated, thus delaying tissue-congestion, and appreciably postponing fatigue. The second advantage is that a longer period of inspiration of air, in relation to expiration, will permit a greater supply of oxygen to the blood.

Let us assume that the rhythmic respiration of a runner was proceeding at a rate of one inspiration during six strides. This would mean that in a series of eight hundred strides he would be inspiring during four hundred strides and expiring breath during four hundred strides. But if this runner were to reduce the period of each expiration to two strides, but continue the period of each inspiration over six strides, in a distance of eight hundred strides he would be inspiring breath during six hundred and expiring the breath during only two hundred strides. The runner has not increased the actual period of each inspiration, but has decreased the period of expiration by two-thirds. And over the same distance he would be taken in far more oxygen than would be possible by the usual rhythmic method of breathing. I am not submitting this method of breathing apologetically, but because it has been thoroughly tested and found efficacious. You can test it by yourself. Give it a fair trial by taking a proper timing over a definite distance. Try the distance with the usual rhythmic breathing, and after a proper rest, time yourself again, but with anti-rhythmic breathing this time. You will find that you will do better time, or, alternatively, the same time can be accomplished as

previously, but with less leg-weariness or distress. But you cannot make a fair test until you have studied anti-rhythmic breathing and practised it until it becomes mechanical.

How to study anti-rhythmic breathing

This a science that is not easy to master to a degree that admits of mechanical performance during running. But it must be thoroughly mastered if it is to provide its full advantages. It should become mechanical, for running has other details for conscious consideration during a race, and unless concentration is maintained on the execution of the correct stride and action, one cannot expect to run one's best race. Therefore steady and persistent application should be applied to this method of breathing until it becomes mechanical during running.

First just try a gentle trot, inspiring during six easy strides, or until the full inspiration has been gained without discomfort. (I use the term "without discomfort" advisedly, for under exertion a really powerful inspiration would slightly inhibit the heart's action.) Then, as soon as the full inspiration has been achieved, suddenly but quite easily, collapse the chest walls and expel the breath as completely and quickly as possible. Then immediately start the inspiration again. Different runners have different reactions to this, for while most find the ratio of six strides for inspiration against two strides for expiration comfortable, others prefer to work six against three, or even six against four. One great sprinter, who is also a good half-miler, uses this method

in most of his distances, for even he has to hold the breath for certain distance in the sprints, he believes in getting his next breath in as quickly as possible, and this suits the strenuous action of the sprint. In the half mile he takes the air in easily and steadily as it were, but throws it suddenly as though to trying to empty the whole of the lungs.

So here you have the scheme to work out in your own way. When you have mastered it, study it in conjunction with proper arm action, so that you can then devote all your attention to the race and to acceleration and action of the stride at the right time in perfect style. As a preliminary trial, however, I recommend inspiration during six strides and expiration during two strides. Towards the end of the race it may be found that the rhythm changes entirely, but this is not likely to happen to the thoroughly trained runner, who knows exactly what he can do and keeps to a definite scheme which he knows will give the best results [...].

The team sportsman can regain normal respiration very speedily after a sprint or any fast work (such as an attack on the opponent's goal) by using anti-rhythmic breathing. This will also pre-oxygenate the blood for ease and speed in the following efforts. The anti-rhythmic breathing can be used while the player is moving about and not necessarily while standing still.

Holding the breath for resistance

It is not generally known that all animals that can strike with the forepaw, such as the lion, have been provided by Nature with the glottis or false vocal cords. When the glottis is closed,

respiration is completely inhibited⁹. This sets up two conditions. The first is greater resistance of any part of the torso to pressure of blows -for, like an inflated football, shock absorption would be spread over a greater area- and internal air pressure would automatically distribute the shock evenly in the body and on the internal organs. The second condition that is set up is a greater point of resistance to physical effort. Thus we get an increase in defensive power and resistance to pressure or blows, together with an increase in attacking strength. Increased speed in the movement is also achieved.

We must realize, however, that for full effect to be gained in defence to blows or pressure, simultaneously with a closing of the glottis a voluntary contraction of the abdominal wall should be secured. In unpremeditated resistance only, it is not possible to have any definite proportion of air in the lungs, for at the period of the expiration of the breath a boxer, for instance, might be struck in the region of the solar plexus. He would therefore simultaneously close the glottis and contract the abdominal wall if he had no time for any other method of defence, such as stopping, parrying the blow, or side-stepping. He could incidently use the resistance method of defence, while using his arms for offence and probably with good effect owing to the improved point of resistance set up for his counter blow.

In premeditated resistance, however,

⁹ This is now called the *Valsalva maneuver*, which is one of the most controversial subjects in Physical Culture. The Saldo's exposition is absolutely clear in this respect and should help to eliminate any doubt about this matter.

any necessary degree of lung inflation may be applied prior to the effort. In most instances an almost complete inspiration of the breath would be of the greatest help, but there may be certain exceptions, and no irrevocable rule can be made at this point. Approximately, the inspiration should be as complete as the best bodily position for the particular feat allows.

Test and master the holding of the breath with the contracting of the abdominal wall in the following manner. During any degree of inspiration or expiration of the breath give the abdominal wall a quick tap with the stiffened fingers of the hand. This must not be hard at first, for you are testing the speed of the voluntary contraction of the abdominal wall. You may find that there is a short expulsion of the breath. Then try again, but this time close the glottis (hold the breath) swiftly enough to prevent the expulsion of any air from the throat. When you are proficient enough to prevent the expulsion of any air, try contracting the abdominal muscles at the same time. It is necessary to master the closing of the glottis before the contracting of the abdominal wall, because some persons do the latter automatically, but not the former. Observation will usually show that a person struck in the abdomen will bring the head forward and contract the abdominal wall, while the expulsion of the air will be heard in the form of a rushing sound, rather than the grunt of one who is trying to hold the breath. Study and practise this from all degrees of inflation and deflation of the lungs, to develop a perfect reflex in this connection for defensive or possibly offensive purposes in games. It is

particularly valuable in cricket (batting), tennis, boxing, wrestling, Soccer and Rugger where any unpremeditated movements become necessary.

Holding the breath for premeditated effort is a simple matter, and in cases where great physical strength is necessary, such as in taking a heavy weight to arm's length overhead, pre-oxygenation of the blood is advised, by the use of full tidal breathing for a suitable period before the effort.

This pre-oxygenation of the blood is the secret of the best efforts in sprinting, jumping and even getting a fast and easy start in middle distance running. The specific application of the pre-oxygenation of the blood will be dealt with as occasion arises.

The athlete who wants to get the very best out of himself should study and practise:

- 1. Full-tidal breathing.*
- 2. Anti-rhythmic breathing.*
- 3. The sudden holding of the breath and contracting of the abdominal wall for concentrated effort and defence.*

(HOW TO EXCEL AT GAMES AND ATHLETICS, Monte Saldo)

To this excellent and extremely informative Saldo's writing, I want to add a breathing method which is very useful in developing extreme concentration and relaxation techniques.

This method is based in Maxalding full tidal breathing, the only difference is the voluntary timing of the expiration. This practice must not be confused at all with a holding of the breath, because it should be achieved progressively and

never forced. You must listen your body in order to expire over the correct period. Anti-rhythmic breathing can be considered a quick variant of this (almost opposite in performance).

Slow MC breathing (SMCB)

1. Take a full tidal inspiration, without forcing the lungs or the thorax in any case. Note the contraction of the thorax muscles and try to intensify them in order to help the breath motion. Concentrate especially in the lateral expansion of the shoulder blades and in the volume increase produced by the action of the *serratus* and *intercostals*. Sometimes, the practice of this form of respiration while you are lying comfortably in bed can help to learn it correctly. In such case, rest your arms slightly open in order to allow a full thorax and shoulder blade expansion and collapse.
2. Now, expire as slowly as you can, controlling the involved muscles and progressively relaxing their contraction. The main muscles that should be progressively relaxed are the *serratus*, the *intercostals* and the *diaphragm*.

It is extremely important not to hold the breath. This is a very natural breathing technique, if you are able to synchronize your exhaling timing period with your oxygen demands. Obviously, the controlled breathing is not adequate for endurance activities, but it is ideal for MC, especially for its controlled ballistic practice.

When you begin to perform BMC (ballistic muscle control), it is very usual to force the expiration in order to

increase the contraction feeling of the muscles. This is an severe error. In fact, the ballistic action should be slowly controlled with the expiration.

Adopt the position corresponding to a concrete isolation and raise the tension in the muscle while you control carefully the relaxation of the muscles involved in the collapse of the thoracic box during expiration.

The controlled breathing method is perfect (and should be the only one) for the application of the Pullum's progression technique (slow + quick) to MC as indicated in **Part 4**.

In a next article we will study the relaxation techniques and we will discover how muscle controlled breathing is the key to extreme relaxation states and the way to achieve the control of some important internal organs, like the heart.

After reading all this information, you may think that the learning of full tidal breathing is a difficult task. This is not the case. In the first Maxalding courses, Monte Saldo advises this.

When you are exercising and when you are in the open air, I want you to make a habit of full-tidal breathing.

By this I mean that you should make full use of the lungs, inspiring and expiring the breath to the fullest extent with each respiration.

But do not force the breathing, as this may cause dizziness.

Just take long, regular and steady breaths, keeping the mouth closed the whole time, of course.

In time, when the chest becomes

large, loose and supple through the performance of the Maxalding exercises, this form of breathing will come naturally.

3.1. Conclusions

- Full tidal breathing is the most effective and natural form of breathing in most situations. It should not be confused with forced inspiration or hyperventilation practices.
- Full tidal breathing is absolutely safe and very beneficial to health. It must be learned progressively in conjunction with the MC of the thorax.
- Abdominal breathing should never be used in any circumstance.
- Some special situations demand some other breathing methods. These methods involve advanced techniques and should not be practised until complete mastery has been achieved. This apply especially to the holding of the breath in order to increase muscular resistance against external attacks or develop explosive strength. Such explosive contractions synchronized with breath holding must be done very seldom, always after a supervised and careful training and only in specific actions that require such a protective internal pressure like extreme weightlifting or hard martial arts combats. Even in the mentioned cases, don't make the breath holds a habit. It is dangerous and detrimental. It is better to learn to contract powerfully the abdominals while you are breathing.
- If you perform breath holds in

conjunction with BMC in order to develop extreme contractile power and strength, never hold the breath more than 5 seconds. The lack of oxygen under such extremely stressful situations can cause dizziness and faint.

- Slow controlled breathing (SMCB), explained before, provides similar contracting strength in demanding actions to the breath hold and it is much less dangerous in general. At advanced stages of MC mastery, the attainable voluntary tension level is so high that the very slight advantage that you could obtain by means of a sudden breath hold is almost negligible and, in general (except, perhaps, extreme sports performance), does not deserve the risks involved in such a quick raise of blood pressure.