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# Mountain Bike Memoirs Level A

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# MEMOIRS

# TECHNICAL FOUNDATION

# MASTER CLASS

# IN MOUNTAIN BIKING

# LEVEL A

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## I. Introduction

The use of the bicycle as an essential skill to generate habits of health, transport and reduction of pollution is a growing social trend worldwide that tries to return to the ordinary citizen elements of empowerment and autonomy in the aforementioned areas. For more than a century now, the bicycle has become an economical, reliable and compatible means of transportation and mobility pro-environment conservation. The constant search for new alternatives for exploration and production of adrenaline originated the idea of adapting bicycles to more hostile and less common terrains. The exclusivity of practicing a unique sport resulted in a subculture called mountain bike or MTB. The rapid development and popularization of this practice, soon become a sport, an extreme sport. This new tendency allowed the creation of an industry that, to this day, has reached technological advances comparable only with race cars, motor bikes development. Braking systems, electronic suspensions, electronic shift system, adjustable saddles, ultra-light and ultra-durable construction materials and the grip to spectacular natural scenarios, are some of the most remarkable features of this cycling trend.

Despite this magnificent advance in technology and science applied to cycling and the benefits that this sports brings to the health of its practitioners, cycling in general, has also magnified the gap between those who practice this activity professionally and those who do it recreationally. The costs of being a professional cyclist make this modality, like many other sports, an option for certain type of economic income. Despite the new and durable construction materials, the wear and tear of the bicycle is directly proportional to the use of it. Trips to exclusive trails or suitable for mountain bike competitions or recreational events, present the necessity of carrying the equipment to these locations, which means that a very low percentage of the population can stop working for days or even weeks, to prepare properly for such endeavors. The lack of knowledge in basic mechanics plus the lack of proper technical

foundation in cycling, are the combination of limitations for the good, safe and constant practice of this discipline.

As in all human activity, the repetition of a task generates automation and mastery of skills, habits. Mountain bike requires repetitiveness and full control of the bike. That is why, through simple and fun exercises, the development and consolidation of the minimum skills that enable the total and safe of the bike, regardless of the level of expertise. This last aspect is essential to achieve a mind-body and body-element connection without having fearing the breakdown of the bike or the conditions of the route. In addition to technical and mechanical development, it is important to highlight the necessity of the essential tools that must accompany each training session. Hydration, nutrition, tools, protective clothing and communication systems are, among others, the fundamentals that every cycling practitioner should know how to use and carry on.

During this master class, we will try to deliver the theoretical and practical knowledge that will help to the increase of new cyclists and citizens immersed in the physical, social and hygienic culture of exercising in regular bases, which means the practice of physical activities for the creation and conservation of a happy life.

## II. Safety

**A.** Essential road equipment.

- **Caramañolas or suitcase for water:** Maintaining adequate levels of water and electrolytes in the body is of vital importance during the practice of mountain biking. Carrying with it sufficient water reserves constitutes an impassable regulation that ensures a metabolism ready to respond adequately to the demands of energy and resistance during the journeys of the outputs to be assembled. It is recommended to carry with you at least two reserves, one for water and the other for isotonic drink, each with a volume between 500 and 750 milliliters, depending on the climate and terrain. It should be noted that prior to cycling practices, it is necessary to maintain optimal hydration levels. One way to check the hydration level is by looking at the color of the urine; the more transparent the color, the better hydrated you are. If, on the other hand, the color of the urine tends to be yellow/orange, the indication is to start consuming water. The coloration on this scale is an indicator of a chronic process of water loss, either urinary tract, sweating due to various physical work or weather conditions and / or simply due to the lack of water consumption, which is replaced with other kinds of beverages. Other signs of dehydration are: dry lips and whitish appearance, dry and/or cardboard skin, permanent tiredness. The re-hydration process must be done in a controlled and regular way so that the body can efficiently recover its normal water levels. The indication is small sips of water every so often period of time.
- **Tool kit:** Whenever a bike ride is made there is the possibility of having mechanical inconveniences. From a puncture to a stay without brakes, anything can happen. For this reason, it is recommended **NOT** to leave without the minimum safety equipment, which is designed to guarantee a safe and healthy return.

**Toolkit elements:**

Keys to release the tire (according to the type of bicycle)

New tire of the size of the rim. (26".27.5" or 29")

Air pump to inflate tires

Detachable levers to remove the tire from the rim.

"Adhesive" patches

Small sandpaper to clean the area where the patch will be placed

Multi-tool to adjust the screws and parts of our bike

Chain depinzador

Allen wrenches from 2.5 to 8 ml

Key torx t25 and t30

Radio key

Flat and star screwdriver

**B. Lights, reflector vest and identity documents**

It is always very important to wear a reflective vest and lights to turn them on when night comes or when the day is dark and cloudy. The two objectives of the lights are:

To be able to see the road where we drive the bike.

To be visible enough for other passers-by. There are two types of lights that must be used:

1. White light of minimum 500 lumens that is located in the front of the bicycle, the handlebar is an ideal location.
2. Red light, with a light intensity similar to white light and that can change from permanent to flashing lighting.

The reflector vest also acts as an element of visibility and it is crucial to always have it at hand, since, in some situations it can be key to be found easily. Identification documents are important to always have with one in case of an emergency. These documents should include an emergency contact (names and telephone number) to call if necessary. It is also recommended to bring a cordless phone. This implement facilitates aspects such as geo stationary location, recording the feats of practice, if there is signal, communication, and in extreme case of trouble activate the "beckon" or emergency call. Carrying money is also important; along the way unexpected circumstances may arise that could be resolved with some cash. The final recommendation in relation to this point is always let a family member or friend know what are you going to do, the place where you are going to practice, and the estimated time of practice, in this way, you can avoid major setbacks.

## C. General bike enlistment

The bicycle must be enlisted before each practice; likewise, it is recommended that after each departure, it be cleaned and reviewed to ensure that the different parts have a greater durability and at the same time verify that no major damage

has been suffered that requires the purchase of parts or the assistance of a professional mechanic.

- General washing of the bike: The bike must be washed using a rag or a sponge. With soap and water moisten the sponge and then start cleaning the frame, steering (handlebars), suspension, tires and finally the transmission.
- To wash the transmission, a thick brush that has large blades should be used to clean the pine nuts, rollers, tensioner and chain well. The use of soap, degreaser is recommended. Once the washing of the parts is finished, they must be completely dried and then the Mountain Bike Chain Lubricant (MTB) applied.
- Adjustment of screws and spokes: in the general enlistment before an exit to be mounted it is very important to verify that all the screw spokes are well adjusted. This step is crucial to prevent the different parts of the bike from misaligning or deteriorating and as such, causing us a malfunction on the route or an accident.
- Brake review: perhaps the most important step of all enlistment. The brakes must be checked and ensured to be properly functioned before each bike ride. It is crucial to check that the brakes are working well, that the braking path is adequate. Brake pads, guayas, and/or fluid should be checked. If the pills are very worn, more than 15%, they must be changed.
- Air check: Tires should be with a pressure between 24-32 PSI (pounds of pressure per square inch), or between 1.65 and 2.21 BAR. Any of the 2 averages is the same. The pressure of the tires may vary depending on aspects such as the weight of the cyclist, the width in inches of the breastplates (2.2, 2.2, 2.3), the compound of the wheels or covers and / or the size in inches of the wheels (e.g. 26", 27.5 ", 29 "), and the terrain to be covered (mud, uncovered with stones, asphalt road, wet, etc.). It is recommended to have at

home a floor pump with manometer or barometer, to be able to measure the air pressure in the tires.

- Suspension review: In an MTB enlistment you have to check the status of the suspension(s), check the date of the last control and hours of assembly that have been carried out. It is advisable to keep track of hours and / or miles on the bike to calculate how often maintenance should be done to the suspension (s). The recommended for optimal performance are 50 hours on basic bikes and 100 hours on mid-range and high-end bikes.

## III. Basic Mountain Biking (MTB) Motor Skills

To be able to enjoy the use of the bicycle you must have a minimum and basic knowledge of how to use the bicycle correctly, for this reason certain important moments have been established when we are going to board and use the bicycle on a journey.

### A. Mounted

It is the correct way to enter and get on the bike to start the tour

Steps:

- Tilt the bike to the side you are going to climb it.
- Cross one leg and stand on the floor with the frame between your legs.
- Brake with both hands.
- Rest the dominant foot on the pedal (the pedal should be at the lowest point).
- Release brakes and propel yourself forward with your foot off the floor and get on the saddle and start pedaling.

B. **Proper gear for the start**

The relationship of the changes consists of the location of the chain between dishes and pine nuts. The plates are located right in the middle of the pedals. Some models have two and three plates, which are counted from the largest to the smallest (from the outside in) numerically one (1), two (2), and three (3). More modern bikes use a single plate, but compensate with more pine nuts. The sprockets are located on the rear rim of the bicycle, on the right side. Pine nuts are listed the same as dishes, from the largest to the smallest, that is, from left to right. To start, a low development must be used that avoids applying a lot of force to the pedaling, therefore, the start change on flat ground must be in the second plate (in case of having 2 or 3 plates) and in the second or third pinion. Development is the relationship that exists between the plate and the pinion. In that order the development ratio of the change Plate 2 pinion 3 = 2-3 is expressed.

It is said, for example: I am in gear 2-3

**Relationship of gear in route**

Once the bike is in motion, after the start, the changes of sane to the speed and inclination of the terrain are gradually increased.

2-6, 3-7 when the terrain is flat or downhill

When it is strong ascent 1-2, very strong 1-1.

**Handlebar grip and brakes**

An adequate grip of the hands on the bicycle allows to secure the direction very well to be able to direct, brake and react at any time without letting go of the

bike, for this the handles must be held with the full hand and use the entire width of the handlebars to take advantage of the stability, the thumbs must be hugging the handles and the index fingers must be extended to the front touching the brake handles.

C. **Static balance:** One of the most important skills for the good use of the bicycle is the mastery of balance over it since this skill allows an adequate execution of the different movements that must be performed in cycling.

The static balance allows you to control the bike in situations where you have to stop without having to get off the bike, for this, stability exercises must be performed below and above the bike that allow you to develop this skill.

The basic main exercise is to locate the dominant foot and stand on it on a pedal in the lowest part of the crank travel, there balance is made by climbing only on this foot, the front wheel must be rotated more or less at 45º towards the opposite side of the dominant foot, the knee of that dominating foot must be completely extended just like both arms, the other leg that would go into the air can be relaxed and semi-flexed helping to stabilize, the head must be a little flexed to direct the look towards the front tire.

D. **Dynamic equilibrium**

**Turns: right – left, one and two hands.**

Once the static balance has been worked, it is passed to the dynamic one to stabilize the body on the moving bicycle. This skill requires the performance of balance exercises in a straight line, in curves and turns for both sides allowing the consolidation and mastery of laterality; it is also very important to practice these same exercises with one hand since the dynamics of cycling demand this

skill. A clear example is to take out and put the caramañola of the water, take your hand aside to warn that it is going to turn, etc.

- **Ascent and descent of small obstacle.**

  Of the most important skills of MTB practice is to learn to ascend and descend on the bike, for this it is required to know and practice the correct way to execute these movements.

- **Ascent of small obstacles:**

  It should be done in a position on pedals. In cycling there are two basic positions, sitting and pedaling. The sitting position has variations depending on the inclination of the terrain being traveled. If the terrain is ascending and there is good traction, the body must be tilted forward in order to maintain the cadence. If there is no good traction, then it becomes necessary to move the body slightly back to give more weight to the rear tire and thus be able to maintain pedaling and advancement on the bike. Normally, ascents are made in a seated position. To overcome obstacles, regardless of their difficulty, the position on pedals or standing must be used. This indication is essential for the cyclist's body to suffer less impact since the legs function as another form of cushioning. Initially, small obstacles are passed by taking advantage of the front and rear suspension, if the bike has full suspension. Regardless of the mechanical conditions of the bicycle the obstacle must be circumvented as follows: the body must be in the correct attack position (knees and elbows in semi-flex, center of gravity in the middle, look in front of the front wheel, feet parallel to the floor with the dominant one in front), then the front tire must be lifted using the arms and sending the body slightly back. Once the front tire is over the obstacle passing the rear tire becomes simpler.

- **Small obstacle descent:**

  It must be done in a position on pedals. The descent of the obstacle must be controlled and slowly always maintaining the correct position of attack (knees and elbows semi-flexed, center of gravity a little backwards, approximately 5cm, look in front of the front wheel, feet parallel to the floor and with dominant forward, heels pronounced downwards).

## IV. Nutrition and hydration

Pre, during and post-practice feeding:
It is vital to program and control an adequate daily diet that covers the specific metabolic and energy needs that cycling requires. A person who practices cycling recreationally should pay special attention to the consumption of carbohydrates and proteins, since the body is exposed to permanent days of pedaling and stressful situations that demand a high consumption of calories. More dedicated cyclists should follow a nutritional pattern that ensures a light body weight, as any excess weight affects performance on the courses. It should also be noted that the nutritional recommendations suggested in this course are of a general nature based on the guidelines that the World Health Organization (WHO) presents. Taking into account the dynamics of physical exercise on the bicycle and its specificity for each practitioner, the following factors must be taken into account:

- **Intrinsic factors**: Biotype of each individual (weight, bone constitution, age, sex.); level of physical and technical condition (basic, intermediate, advanced); experience; health history and mental tenacity.
- **Extrinsic factors**: Duration of the practice; terrain (Mountain, flat, asphalt road or uncovered with stone, mud, roots, etc.); climatic conditions (ambient

temperature, wind speed, levels of allergens in the air, percentage of relative humidity, number of participants).

- **How to feed before going out to ride or ride a bike?**

Always have breakfast minimum 40 min. Before getting on the bike**.** Breakfast should bring: carbohydrates (bread, arepa, biscuits, rice, pasta); protein (eggs, tuna, ham, chickpeas, milk, yogurt, etc.); water (600ml); vitamins and antioxidants (fruits or multivitamin); electrolytes (e.g. sodium, potassium in foods such as bananas, salt, isotonic drinks); fat (peanut butter, avocado, olive oil). Remember not to eat all the foods mentioned here at the same time, select those that best suit your tastes and possibilities. It is always important to visit a nutrition and dietetics professional who individualizes portions and foods.

- **How to feed in MTB during the tour?**

You always have to bring food for the tour regardless of the time that the departure lasts. It is crucial to replenish the levels of energy and electrolytes that are used. So that the performance during the outings to ride a bicycle is not interrupted by extreme cramps or fatigue it is recommended to eat and hydrate every hour. The food that is carried in the suitcase or in the pockets of the jersey should be easy to consume and properly fractionated (small sandwiches, cookies, energy gels, etc.).

- **How to feed after an MTB tour?**

Once the bike ride is completed, the body must be recovered with a good meal that contains proteins, carbohydrates, vitamins and water. The body, exhausted after the bike tour, requires rich foods, nutritionally speaking, for a good muscle and energy recovery. If the goal is to reduce body weight or get in shape, it is recommended to receive professional advice.

- **Pre, during and post MTB practice hydration**

  It is one of the most important requirements that must be covered in mountain biking (MTB) since the body loses a very high amount of water and electrolytes. For good performance/performance during long-term endurance physical exercise it is recommended to consume water regularly and in moderate amounts before practice. On the day of departure and during the tour you should continue with the consumption of liquids without expecting a very high degree of dehydration or excessive thirst. That is why it is recommended to ingest water and electrolytes before, during and after the tour. The guideline suggests ingesting between 120 - 150 ml of water or electrolytes every 15 minutes and the frequency of consumption should be increased when the temperature is high. This aspect must be taken into account when programming the amount of water that is carried and the places of supply.

## V. Clothing

One of the most important aspects when cycling is to use the right clothes that allow optimizing performance based on the comfort and safety of users, so over time garments have been established with suitable materials to enjoy the use of the bicycle.

- MTB Helmet
- Long MTB gloves
- Photo-chromatic glasses
- Cycling pants with pad and straps
- MTB cycling jersey with pockets in case you do not carry a suitcase to carry things.
- MTB cycling socks
- MTB cycling shoes
- Windbreaker Jacket
- Waterproof jacket

## VI. Basic mechanics

- **Tire repair**

Getting pricked or punctured is probably one of the most common breakdowns in cycling. Regardless of the quality of the bike, a puncture can happen anywhere and in any condition. Being able to overcome this type of setback is essential to be able to enjoy the practices and have more autonomy. Before a puncture what must be done is to place a new tire, which must go in the basic tool kit. If you do not have a change tire or have it damaged, you have to proceed to place a patch in the place of the hole. For this, you have to locate the bike in a safe place and as comfortable as possible. It is recommended to place the bicycle with the tires up to be able to better manipulate the tool and, in the worst case, remove the wheel. It is very important to carry the tool you need according to the bike you have. Basic bicycles or very old models require special keys. The most modern designs have as a common feature, the ease of assembling and disassembling the tires, but this is a matter of another level. For the case that concerns us at this level, the puncture repair will be made without disassembling the tire.

**IMPORTANT**: Before turning the bike wheels up you have to place the chain on the last pinion, that is, on the smallest one and remove the tool holder.

Step 1. Release the pineapple nut from the tire, remove the pineapple nut from the tire, release with the wheel tool wrenches.

Step 2. Disassemble the rim: to remove the tire you must use the 2 detachables that come in the tool kit, a detachable is put between the rim and the rim shell and secured between one radius, then the same is done with the other about 10cm away to disassemble the rim and remove the tire.

Step 3. Open the air valve of the tire pineapple: when the tire is thick pineapple, it has no screw valve, so the nozzle of the air pump is placed directly in the thick part of the nozzle of the air pump.

Step 4. Put in the air pump nozzle and inflate the tire to check where the hole(s) is located. The pump must be inserted into the pineapple and held by hand while the tire is inflated.

Step 5. Look for puncture (s) With enough air you check where the hole is with the ear and near the face to feel the air escaping from the tire, once it is located it is marked so that it is not lost.

Step 6. Sanding: The sandpaper that comes in the tool kit is used. The surface where the hole is must be sanded by calculating the size of the patch so that it adheres properly.

Step 7. Clean the place where it was sanded and then glue the patch in such a way that the hole is in the middle. The patch is pressed until it sticks well for 30 seconds.

Step 8. Inflate the tire again to confirm that the patch has been well glued and that it has no more holes. (if it is fine, the tire is deflated again and ready to put it back on the rim.

Step 9. Rim shell check: the tire cannot be put back on the tire before checking that the tire does not have tips, glass, wires or any element that punctures the tire again; for this, with the hand you must touch the entire internal surface of the breastplate to inspect that it is clean, otherwise you have to remove it with the tweezers that come in the tool kit.

Step 10. Put the tire back in and put the nut on the pineapple

Step 11. With both hands re-entalonar the breastplate inside the rim of the rim. For this, you have to place the wheel on the floor, preferably lying down, to make it easier; then, with the thumbs, close the spaces until you achieve with force the final adjustment of the breastplate with the rhine, entalonado. Recommended to do this step with gloves on.

Step 12. Re-inflate the wheel until it is ready, i.e. 24-32 psi.

Step 13. Put the wheel back on the bike and tighten the screws that hold it. When the wheel is placed back, the chain must be placed, once again, on the last pinion (check that the entire bearing system is working properly before getting back on the bike).

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