



Drivers' Guide

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Introduction

This Guide is intended primarily for newcomers to the sport although it will be of value to all competitors with its variety of information relating to physical wellbeing and care of equipment.

References to MotorSport New Zealand Inc rules and regulations are mentioned at various points, the Guide is published for information only and has no regulatory value (except it will assist in answering the questions for a M Grade examination); many of the basic safety measures suggested do not in fact feature in any regulations but they are very easy to adopt and are strongly recommended.

CHAPTER ONE — Personal Preparation

Before you compete on an event, give some thought to your general fitness. All events require you to declare that you are free of any medical conditions that would prevent a person from competing. MotorSport NZ strongly recommends that all competitors have a complete medical examination prior to competing in their first event and again annually. If you are passed fit but become ill at a later date, you must declare this.

Medical requirements for competition licence and Entry to events:

- *All events entry forms require you to sign a declaration that signifies you do not have any current illnesses or medical conditions that could impair your ability to drive.*
- *To obtain a C Grade or R Grade Competition Licence; You need to complete a Medical Aptitude declaration (you will have to repeat this process every time you renew your licence as well).*
- *To obtain an International Competition C Grade or R Grade Licence you will need to undergo a complete medical examination (you will have to repeat this process every time you renew your licence as well).*
- *If you are between the ages of 12 to 16 inclusive MotorSport NZ requires you to undertake a medical examination and physical assessment prior to requesting a Competition Licence of any grade. Contact the MotorSport NZ office for more details.*

Medical:

In a sport where quick reactions are vital, the medical examination required by MotorSport NZ (they have a form detailing the requirements for the medical examination) includes an eye and a colour blindness test. If you need vision correction, wear shatterproof lenses in all-enveloping non-metallic frames - and use a full-face helmet. Contact lenses are acceptable but stop if you have any problems with them during an event.

Use a tinted visor and/or windscreen sun strip rather than sunglasses.

Physical:

It takes a reasonable amount of physical stamina to drive a competition car and remain mentally alert so your physical condition should enable you to at the very least meet the following physical fitness criteria or an equivalent test;

- Beep test to level 5.

Research on ideal driver fitness indicates that core body strength exercises are an essential component of any physical fitness training programme.

Disability may not be a bar to competing in motor sport – MotorSport NZ will be able to advise you.

Medications:

If you take any medication, including over the counter remedies, be sure to declare this. If necessary, wear an easily identifiable tag with details of your special medical needs. This could be vital at the scene of an accident and assist medical personnel with diagnoses. On rallies make sure your codriver is aware of your medical condition and you know theirs. As a general guide, the sport works to the list of drugs issued by the Drug Free Sport NZ and the only drugs acceptable are those on their published list. If in any doubt ring their hotline 0800 DRUG FREE (378 437) or go to their website at -

<http://www.drugfreesport.org.nz/Drug+Testing/Banned+Substances/2010+WADA+Prohibited+List.html>

Apart from prescribed drugs, do not take any others because they will not enhance your performance, nor will alcohol.

Appendix 1 to this Guide explains why the use of banned substances in motor sport is both prohibited and pointless. It's worth remembering that traces of substance can stay in the body and give positive dope test results days or weeks after absorption. On the other hand, you need to know what to do if you are obliged to take medicine, which is also explained in the appendix.

If for any reason you are feeling seriously below par, you should consider whether to withdraw from an event because you could be a danger to yourself and other people.

Think about your diet and particularly your fluid intake. As a general rule, eat and drink little and often rather than filling up on calories and liquids just before competing. On long, hot events you will need to guard against dehydration.

(Appendix 2 contains further suggestions regarding hydration and diet before an event.)

CHAPTER TWO — Equipment

A. CLOTHING:

As a general rule, buy equipment from recognized and reputable suppliers and, where there are national or international standards make sure everything meets them. Criteria change so you need to keep up to date on the latest information. (MotorSport NZ publish details of these in its Manual under Appendix Two Schedule A)

Underwear: Don't skimp on this just because it's out of sight -it has a key role to play. It is next to your skin so in a fire it is your last line of defence. For obvious reasons it should be flame resistant and man-made fibres other than those developed to provide fire protection (e.g. Nomex), should be avoided because they could melt in a fire and stick to your skin. Ladies need to remember that very few manufacturers make bras and panties of pure cotton so they will need to look very closely at garment labels when purchasing suitable underwear.

Socks must be flame resistant too.

Overalls: Get the best for competition you can afford; it's your life they are protecting. You can get good protection for a modest cost. Keep overalls clean and take care to ensure that washing instructions are followed so that any protective treatments are not washed out. Always wear your own overalls. Do not rely on borrowed equipment.

Footwear: Make sure yours are fireproof, the right size and that your laces are tied so that they won't get tangled around the pedals. Keep your footwear clean and dry.

Overshoes are useful in wet service areas and paddocks.

Rally jacket and a hat: For some events — rallies for instance — it is wise to have these to keep you warm in service areas and in case you stop in a special stage; 30% of all heat lost from the body is lost through your head. Hypothermia won't help your competition chances. It is a good idea to have a thermal blanket in the car to protect you against the cold while on other events you may need to guard against sunburn.

Waterproofs: Used them to protect against rain, keep in mind that some are less inflammable than others.

Gloves should be flame resistant. Avoid leather because this tends to shrivel and go hard in a fire. If you are driving an open wheel race car your gloves need to be of a bright colour that contrasts with the car colours, this helps the starter see your signal clearly if you have any problems on the start grid.

(See Appendix 3 for more information on clothing.)

B. HELMETS:

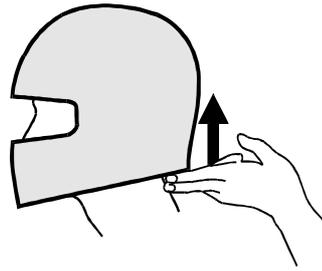
Take time to try on new helmets, get professional advice and buy the best you can afford.

Full-face helmets give better protection against fire and facial injury than open ones. For closed cars, open face helmets are tolerated if helmet removal in the car to enable access to an injured competitor's airway is difficult. Ideally in this case there should be a detachable chin bar.

Size is important: a helmet that does not fit snugly can easily rotate over the front of the head in an accident and come off, reducing the protection it provides to zero. Never wear a helmet that is not your size or that needs any extra padding to make it fit.

To check the size, wearing an FIA approved balaclava, position the helmet so that it sits low on your forehead; you should be able to see the edge of the brim at the extreme upper range of your vision. Adjust the retention system so that it will hold the helmet firmly in place and then try to remove the helmet without undoing it. If the helmet can shift over your eyes, it is too big; it should be very difficult to move it about in any direction and not possible without movement

of your skin. Basically, choose the smallest helmet you can bear, but without any particular pressure points (or voids between head and helmet). Do not borrow someone else's helmet!



Wear the chinstrap as tight as you can without discomfort. With a double D-ring attachment, it's a good idea to loop the strap so that a doctor can just pull the end to undo it quickly in case of need.

Choose a helmet with a good ventilation system.

The visor is an integral part of the protection against impacts and fire: it should have a positive locking mechanism to prevent opening during an accident. Don't forget to peel the protective plastic wrap of a new visor (it happens, even in Formula 1).

Don't drill holes in your helmet and when decorating it, remember that special paints must be used to avoid damaging the helmet.

Avoid stick-on accessories: if really necessary only use those of the helmet's manufacturer, fixed so that they can be knocked off easily. If you wish to fit a drinking tube, seek instruction from the helmet maker and keep to one, small diameter hole. Don't mount any communications equipment in or on the helmet or disturb the lining in any way.

Always protect your helmet when not in use. Pad your roll cage in areas of likely contact so the helmet does not suffer any impact damage, no matter how slight. On rallies, keep it in a lined bag and make sure it is well supported and protected in the rally car between stages.

The helmet is probably the piece of equipment most likely to save your life - take care of it and it will take care of you.

Don't drop or knock your helmet and if it suffers any impact, or gets scratched, consider replacing it. At the very least have it inspected by an expert after any impact, even if only against the garage floor.

Always dry the helmet carefully after use; it's a good idea to store your helmet in a dry warm closet between events.

Remember the helmet will not last forever, even though it is undamaged on the outside gradually over time the interior lining hardens and will not work as originally intended so it pays to look at a replacement policy of approximately five years.

C. HEAD AND NECK SUPPORT

One of the most significant advances in driver safety in recent years has been the introduction of the HANS device (Head and Neck Support) now known as "Frontal Head Restraints" (FHR). This is a device worn by drivers over the outside of their overalls and tethered to the helmet. It is secured to the driver by the shoulder straps of the safety harness. The device very effectively prevents the neck being stretched and twisted excessively in an impact, dramatically reducing neck loads and the likelihood of spinal injury.

The HANS device greatly reduces the risk of injury to face and neck in a frontal accident and has no disadvantages **as long as it is properly installed and worn correctly** — some cars may need adjustment to the seat or shoulder belt anchorages. You are strongly advised to use it, for all events - it is mandatory in the majority of MotorSport NZ Championship classes.

It is however essential to use a helmet approved for the HANS device use and to have the HANS device installed by the helmet manufacturers or an expert approved by them. The FIA (being the world governing body for motorsport) publish a guidebook detailing all you need to know about installing and correctly wearing a HANS device. Go to the FIA official website for further details on the approved FHR systems use the following address –

[http://argent.fia.com/web/fia-public.nsf/B4C9D26E26B5320FC12578CC0038E07C/\\$FILE/L29_Approved_FHR_systems.pdf](http://argent.fia.com/web/fia-public.nsf/B4C9D26E26B5320FC12578CC0038E07C/$FILE/L29_Approved_FHR_systems.pdf)

Note that the use of any protective device attached to the helmet is prohibited unless FIA approved. There is little evidence that wearing one of the proprietary types of neck brace or cervical collar will help in an accident; some may exacerbate injuries.

D. EAR PROTECTION

Noise is an unseen and sometimes overlooked danger in motor sport. Prolonged exposure to high decibel levels can lead to loss of hearing, or tinnitus (ringing in the ears), which in acute form can have disastrous effects on your health. Unlike a broken limb, damaged hearing does not recover so always wear good ear defenders. The use of moulded earplugs is highly recommended.

Apart from engine noise or the sound of a shouting co-driver, wind noise can also be damaging - another good reason for wearing a properly fitting helmet with good ear protection.

CHAPTER THREE - The Working Environment

Note: *Although modifications for comfort with no effect on performance are generally allowed, before making any alteration to a car, it is best to check that the relevant technical regulations permit it.*

As a competition driver you will perform better if your car is made as driver-friendly as possible. Take time to sit in your car with all your race equipment on and attend closely to the following points;

A. SEATS

The seat should be FIA homologated or, for non-production based cars, a sturdy, one-piece, properly fitted shell.

When selecting a seat, look for:

- Strong tight fitting side support.
- Strong side shoulder support close to the driver.
- Strong side and rear headrests with FIA standard energy absorbing padding.

When the seat is installed in the car:

- The seat back should preferably not be inclined more than 30° from the vertical.
- The lateral headrests should be as high and as close to the head as is practical for movement and vision.
- The seat squab should kick up in front of the buttocks (but allow adequate room for the legs under the dash, bulkhead and steering wheel).
- A seat should only be used with the seat padding supplied by its manufacturer; excessive padding will diminish the protection provided by the seat and seat belts in an accident.
- In an accident, the combination of seat and safety harness will only work if the seat remains attached solidly to the floor - follow the manufacturer's instructions or enlist the aid of a scrutineer for the installation, and then check regularly.

B. PADDING

- Look for any corners and edges in the cockpit where your head, hands and legs might make contact; round them off and/or pad them with appropriate energy absorbing material (e.g. FIA Specification or Neoprene RG30 for the head, Confor, Sumate or similar foam for limbs).
- To identify these areas, sit in the car and kick forward and then outward. If there is anything that makes contact with the ankle, shin, or the leg, especially at the knee, it should be padded. If not it will cause pain in a shunt.
- Gear change; paddles behind the steering wheel are ideal, but in the case of an exposed shift lever, avoid radii smaller than 25mm on the top knob and pad the shaft with stiff foam or rubber as described above.
- If exposed, the gearshift lever mechanism should be protected by a smooth casing that will prevent the pivot point on the lever from injuring your thigh in a side impact. Use a thick rubber cover over the mechanism that will leave the actual shift lever exposed but will protect the driver from the mechanism.
- Pad every tube of the roll cage closer than 50cm forwards and sideways of the head with stiff foam, which cannot be compressed with the fingers (e.g. FIA Specification or Neoprene RG90). Note that although FIA Specification roll-bar padding may feel as hard as wood, it is only intended to be hit by the helmeted head, in an accident. It has been scientifically developed to combine with the impact reducing properties of your helmet, to allow you to survive the kind of blow, which has severely injured or killed drivers in accidents in the past. Common foam rubber will do nothing to help in that situation, even if more comfortable for a light tap on the head.
- Pad the steering column and its bracket.

- In single seaters, in particular, it is advisable to wear kneepads. These pads need to cover the outside of both knees and the inside of one knee. This protects the knees in a side impact and particularly the vulnerable upper part of the knee on the outer side of the leg (which can even suffer in the constructed environment of a racing car cockpit regardless of accidents), as well as the outer, lower part of the knees. An important nerve passes close to this bone and is vulnerable to being damaged as well. Wearing proper kneepads also helps prevent the inside of the knees from striking and damaging each other (injuring the upper inner part of the knee). Kneepads can be the simple type that basketball players use or as sophisticated as those favoured by roller blade skaters and freestyle skateboarders. In single seaters this can also be achieved by putting padding on the inside of the tub and first bulkhead, and by using a seat with padded divider between the knees.
- Ankles can be protected using the same principle with padding inside the socks or padded boots.
- Elbow pads are also recommended, particularly in single seaters where the elbows can be subject to chronic irritation. Another source of irritation is wearing flame resistant overalls without the mandatory long sleeved FIA approved underwear. Not wearing the long sleeve underwear lets the overall rub on the unprotected skin of the elbow.

C. VENTILATION

Scientific studies have shown that physical and mental capacities diminish after the human body's core temperature reaches 38°C. If temperatures in your cockpit are likely to be high, arrange for sufficient ventilation to cope with ambient temperature and humidity, giving equal attention to ensuring air can exit as well as enter the cockpit. Sunscreens on windows and fitting isolation against the heat from engine and exhaust will help. Above all, ensure your correct hydration during the event as explained in **Appendix 2**.

It should be noted that the same studies indicated that not wearing FIA homologated fire resistant clothing had little effect in reducing core temperature - although it may be expected to have a considerable effect in raising it in case of fire.

D. VEHICLE SWITCHES, GAUGES AND SAFETY CONTROLS

You need to be able to access all switches without stretching and so the time that your hands are off the steering wheel is at an absolute minimum. All the gauges should be visible and if possible situated so you only have to glance down keeping at least fifty percent of your vision still focused on the road or circuit ahead.

Note: *Ensure that the electrical isolator and onboard extinguisher switches are within easy reach when you are strapped into your seat.*

E. SUPPLEMENTARY COMFORT

If you are installing drinking bottles, radio equipment, mobile phones, video cameras or any other objects in the car, bear in mind that they can be lethal if not properly fixed, whether they come loose and lodge under the brake pedal for example, strike you or you strike them in a crash. Fix them to withstand a 40g deceleration and, if hard or sharp, mount them well away from you.

Light can blind the driver in some situations and can lead to accidents (sun low in the sky or - in a 24 hours race - the headlights of following cars). A stripe in the upper part of the windscreen or tape in the rear window can prevent this.

CHAPTER FOUR — Safety Harness and Window Nets

A. SAFETY HARNESSSES

It is important that your harnesses are maintained in good condition, clean and correctly adjusted at all times otherwise event scrutineers may recommend you can not compete.

- Whenever possible use a 6-point harness as the crotch straps prevent you sliding down and forward in the seat.
- Keep each strap as short as possible by equalising the adjusters.
- Ensure that the belt anchorage points are installed on the car professionally to the latest guidelines from the manufacturer and MotorSport NZ.
- The lap belt should cross the pelvis not the abdomen: the outer edges should make contact with the bony prominence of the hips.
- When the shoulder belts are tightened they should not pull the lap belt off the pelvis onto the abdomen. This can usually be avoided by tightening the lap belt first and by making sure that the crotch straps are of the proper length.
- It is important to keep the shoulder belt adjusters as low as possible (but still on the lower tongues of the HANS device when one is used), away from the neck - severe injury is possible if they are badly located.
- The harness belts are designed to stretch to absorb the shock. Wear them as tight as possible (whilst still breathing) to avoid excessive forward movement in an impact. Leaving the crotch straps loose for example just increases the jolt when the slack has been taken up instead of absorbing it.
- Belts only fail when previously damaged - check regularly for cuts or abrasions and replace if in any doubt. Bent hardware, incorrect anchoring or poor routing through seats or across seat edges cause problems.
- Only use harnesses that are MotorSport NZ recognised or FIA homologated and never buy second-hand. Don't let seat belts become scruffy or dirt laden, dirty belts creates abrasion which will damage the strength of the webbing.
- Know how to release your belts, remembering that you might well be upside down.
- Always renew the seat harness after an impact.

B. WINDOW NETS

Quickly detachable nets for the side windows of closed cars are obligatory in many disciplines and their value in saving hands and arms in a roll cannot be over-emphasised. An indication on the outside of the car of where to detach them is advisable.

CHAPTER FIVE — On an Event

A. ALL EVENTS

Know the rules for your particular event. Obvious? Of course but not everyone does and if, for example, you don't know the flag or warning signals then you are a danger to yourself and to other drivers on the event, so learn the meanings of the various flag or light signals, warning signs you will encounter. These are all contained in the Motorsport Manual and/or the Supplementary Regulations and any official bulletins for the event. (**Refer to Appendix Four Flow chart for more details**)

If in doubt about any regulations ask the Competitor Relations Officer or Clerk of the Course (for events where there is no Competitor Relations Officer appointed) to explain the meanings to you.

It also makes sense to know the law of the land such as the speed limits for towing trailers, the requirements for handling and storing race fuels and so on. A high visibility offence can bring the sport into disrepute and, on a personal level, make it more difficult for you to find sponsors if you get bad publicity.

In owning a competition car that you may wish to drive on public roads you need to obtain the vehicle requirements relating to obtaining an LVV Authority Card. This is a legal requirement to allow you to use your car in its rally trim on public roads. (Refer Appendix Two Schedule A in the current MotorSport Manual for details of how to apply for the LVV Authority Card)

As with fitness trainers and diets, how you mentally prepare for an event is up to you. But however you prepare, it makes sense not to wear jewellery, earrings, necklaces or bracelets other than those carrying important medical information. Decorative studs through lips and tongues for instance could interfere with some medical procedures, while studs in eyebrows could snag on helmets.

Equally importantly under no circumstances compete while chewing gum - a potential killer if it gets stuck in the windpipe in an accident. It makes sense to remove false teeth too.

It is a good idea to empty the bladder and bowels before an event ... nerves may act as natural reminders of this.

Above all, always obey officials. Their instructions will often be given for safety reasons and although it's not a safety issue, be polite to officials. It is not easy to get marshals for some events and the problem won't be helped if drivers with an exaggerated sense of their own importance shout at them.

For events when you are not competing why not consider marshalling yourself? Not only will you be putting something back into the sport but also seeing something of how events are run may actually help you perform better.

B. RACE EVENTS

Study carefully the supplementary regulations of each race event, as they may have special instructions about pre-grid and starting procedures, safety car operation, how to go to parc fermé at the finish, etc., all which contribute to both your safety and your chances of success — "to finish first, first you have to finish."

MotorSport NZ has developed a yellow flag zoning system on all its permanent race circuits to clarify and assist competitors understand the effect of no passing areas when yellow flags are displayed, it is important that you read and understand clearly your responsibilities (refer Motorsport Manual Appendix Four Schedule Z).

On the track itself, drive as competitively as possible bearing in mind general safety, and on a track do-as-you-would-be-done-by. If you wish to travel slowly in practice to get a clear lap, or have to at any time, this must be done without hindering other drivers in any way; make sure the mirrors are adjusted so you can see them. Motor sport accidents happen for many reasons but driver errors are a **major** cause, so your life could literally be in your own hands.

If you have to stop or leave the car out on the circuit;

- As far as possible, park near a vehicle access point, marked with a large orange panel painted on the barrier, or if on fire, near a marshal post or extinguisher point marked with a small fluorescent orange panel above the barrier. During practice take note of where such points are.
- Never leave your car where a car out of control is likely to end up or in a run-off area (if you have a choice).
- Leave the car in neutral (if there is no risk of it rolling) with the steering wheel and ignition key, if relevant, in place.
- Do not stay in or around the car - get behind a barrier as soon as you safely can.
- Do not remove your helmet until you are behind a barrier.
- Do not call your team unless you are in a safe place.
- Do not cross the track unless instructed to by a marshal.
- If you know your car is losing oil, get off the racing line, then the track, as soon as safely possible - don't try to get back to the pits.

Note: *It is advisable to stay behind the barrier closest to your car until the recovery service arrives and to then accompany the car to the paddock to assist and avoid further damage.*

C. RALLY EVENTS

To compete in any Rally you need to learn the meanings of the rally symbols, control procedures, event timing and safety regulations you will encounter (Appendix Three Schedule R in the current Motorsport Manual).

If in doubt about any regulations **ask the Competitor Relations Officer appointed to the event to explain the meanings to you.**

On a Rally, drive as competitively as possible bearing in mind general safety, and the safety of other competitors. Rally regulations specify very clearly what you must do if breaking down in a stage or running off the road and equally spell out what to do when coming to a scene of an accident in a Special Stage. (Refer Appendix Three Schedule R for full details).

D. RALLY SAFETY

- Read your event regulations. Understand the organisers' safety precautions such as the use of yellow flags on stages and SOS/OK boards.
- Check your first aid kit and make sure that its contents are suitable for rally needs.
- Know where the radio points are on a stage. These are the points where you can quickly summon help for your fellow competitors. You may also choose to walk to a radio to inform the operator of your plight if you retire or crash, but be sure that you know exactly where you are, and what you are letting yourself in for if you choose to do this - it is easier to find two people near to a car than to look for one wandering through a forest, looking for another junction.
- If you do retire, and decide to leave a stage, make sure that Rally Headquarters are aware of your actions and that you are OK. If you fail to let Rally Headquarters aware you create unnecessary searches and this will almost certainly lead to you being penalised and having your competition licence endorsed.

CHAPTER SIX — Accidents

You've prepared properly, you've got the right equipment, you've studied the regulations - but you can still have an accident.

If you see an accident coming ...

- Push your head towards the side impact (into the headrest), not away from it,
- Do the same with your legs if possible.
- Leave your hands on the steering wheel with your thumbs out of it.
- Do not try to resist the impact with arm muscle tension.

Expert medical and rescue crew will be sent if you are injured or trapped; the marshals themselves will start fighting a fire. If the marshals take your arm or give you instructions this is because they know you may be concussed or in shock and in potential danger — allow them to get you to safety as directly as possible and don't cross the track without their guidance.

If you do have an accident, is there anything you can do to help the rescue team help you? Well, if you are knocked out, then not a lot but if you are conscious:

- Try to stay calm.
- Use the cut-off switch to isolate the electricity supply and stop fuel being pumped into a hot engine.
- If there is a fire operate the switch to fire your onboard extinguisher. If exiting from a closed car is difficult you may be able to push out the windscreen or rear window with your feet.
- If the car is on the track, don't undo your belts or remove your helmet until you are sure it's safe to leave or a marshal is there to guide you.
- If the event is a Rally then the first thing to do is put out the Safety Triangle, clear any debris off the road if you can and display either the SOS or OK sign to the next cars.
- If the car is on its roof, support yourself before undoing or releasing the seat belts, in order to avoid landing on your head and injuring your neck.
- Remember to replace the steering wheel if removed.
- It may be worth counting to five before leaping out of the car rather than jumping in front of oncoming traffic while you are still angry or disorientated.
- If you are injured and experience difficulty moving, it is best to stay in the car until the safety crew arrives. Make them understand the problem and wait until a doctor arrives in order to supervise your transport without aggravating an injury.

If you are unlucky enough to have an accident, do what the doctor tells you. Even after only a minor accident a doctor may ask you to go back for a check up. Do so. It is for your benefit.

Should you be involved in an accident that causes injury to yourself then the sport requires a medical check and this could mean you are stood down from competing until cleared fit by a Doctor.

CHAPTER SEVEN — First Aid

It is worth having some basic first aid training. On some long distance rallies you may be the first on the scene at an accident; if you were the first person to arrive and you didn't know what to do, think what an idiot you'd feel. At other times it may help you understand what rescue personnel are doing to you.

A variety of national and local organisations offer first aid and resuscitation training at a minimal expense. It could save a life.

APPENDIX ONE

Doping and Motor Sport

This is an issue that concerns all licensed drivers from the top level to the amateur. Put simply, **doping in motor sport doesn't make sense!** In most cases it is of no use and you put yourself and others at risk.

The common risks associated with doing sports are well known. The media frequently highlight the cases of athletes who suffer physically or, in the worst case, die during sports events.

Drugs that are often prescribed to treat patients can be abused and become doping substances when they are administered in excessive dosages or as a long-term or periodic treatment, or when several drugs are combined in an incoherent manner. In these instances, athletes risk going beyond their physiological limits, suffering from sudden or delayed pathological effects, and becoming addicted and dependent.

In motor sport, any product that modifies the behaviour may cause serious anomalies in a competitor's way of driving.

Considering the inherent dangers of our sport, it is stupid and may be a crime to take risks by taking such products.

- Whilst "hormones" (cortisone and cortisone derivatives, male hormones, growth hormones, etc) may be taken to boost muscle performance beyond the usual limits in aerobic and anaerobic sports such as swimming and weight lifting, in motor sport there is nothing to be gained from these substances.
- EPO, notorious on the *Tour de France*, increases the level of red corpuscles in the blood, allowing especially high-level competitors in aerobic sports (cycling, long-distance running, etc) to push their limit even further. Motor sport is not an aerobic sport and the "physiological engine" works at a very different power level, so using such products in motor sport is useless. Vascular problems caused by taking EPO are substantially aggravated when someone is seated for an extended period of time.
- "Beta blockers" (used for treating heart problems and high blood pressure) slow down the heart rate. Since it is well known that in our sport the heart rates goes up considerably, tests were conducted to compare racing times with and without using beta blockers; performance remained unchanged. In case of an accident resulting in bodily injuries, beta-blockers can cause serious and sometimes deadly trauma.
- Certain asthma medicine (such as Ventolin) supposedly serves to increase the breathing capacity, especially in long distance sports. In motorsport, do not expect any changes to happen.
- "Anti-sleep" medicine (amphetamines and similar products) undoubtedly used to be used in marathon rallies that were run in part during the night. That type of competition no longer exists. Using these products has become useless; if you are tired, take allowed "invigorating" products - they are legal.
- Alcohol and soft or hard drugs are used mostly "for the fun of it", during times of depression, or out of peer pressure. They are obviously forbidden, especially in our sport where they are considered as doping substances because their effect as inhibitors causes people to take unusual and sometimes foolish risks. Taking such substances puts in jeopardy the lives of those who take them, other drivers, and anyone who is around them; for example officials or spectators. These products are completely banned.
- The dangers of cannabis are often underestimated; it seriously modifies a driver's behaviour as he is no longer aware of his limits and can turn overly aggressive, etc.

What should you do if you need Medical Care?

Never take any medication that has not been prescribed by a doctor. Do not listen to the advice of well-meaning friends and sport "gurus". If you have sport-related health problems, go to see an informed and competent medical doctor; you will find out that a lot of permitted medicine can be useful and beneficial.

Tell your doctor as well as the pharmacist that you are an athlete; they both have a comprehensive list of the substances that you are not allowed to take because they would make you fail doping tests, a fact that would result in heavy disciplinary sanctions by MotorSport NZ. If you buy the medicine over the counter, make sure that you carefully read the enclosed leaflet, which will inform you if the medicine contains a banned substance.

What do you do if your state of health requires you to take a banned substance?

If there is no alternative treatment, in some exceptional cases it may be justified to take certain banned substances. In that case, the doctor will give you a medical certificate that you should keep and present to officials in the event that you have to undergo a doping test.

If this is a one-time prescription, show your certificate to the medical officer or, in his absence, to the stewards of the meeting or the clerk of the course before the event and again before the first practice for your race.

If this is a long-term treatment, **at the beginning of the season** you must submit a letter to the MotorSport NZ Chief Medical Officer, which includes documents justifying your need to take a particular medicine.

In any event, have either a copy of the prescription or a letter from your doctor to show to the medical officer in charge of carrying out the doping test if you have to undergo one.

If you fail to abide by these rules, even if you act out of good intentions, you might be summoned before the disciplinary authorities of MotorSport NZ if you test positive.

Doping Tests

A doping test may be undertaken at any event or during any practice session at the initiative of MotorSport NZ.

Anyone who refuses to undergo a doping test will face disciplinary action. A medical doctor who drafts a report, a copy of which will be given to the competitor, attends tests.

The Disciplinary Procedure

Test samples are sent to a Drug Free Sport NZ approved test house.

The results are communicated to MotorSport NZ.

If banned substances are found in a sample, the disciplinary procedure set out in the MotorSport NZ regulations will apply. The competitor is summoned before a panel convened by MotorSport NZ, which makes a ruling. The competitor may appeal against any sanction and, in addition, may ask for a counter-analysis as soon as the procedure starts.

Now that you know about this matter, please be reasonable and act responsibly in your own interest and in the interest of your fellow drivers and the entire motor sport.

Athletes who dope themselves cheat no matter what sport they practice; in motor sport, moreover doping makes no sense and puts the drug taker and others at risk.

In motor sport, pills definitely do not make champions. In order to win, it takes appropriate training that is regularly evaluated, a healthy life style, balanced nutrition, regular medical check-ups, and rest if you are injured.

APPENDIX TWO

Hydration and Diet

While the following recommendations were written by the FIA medical commission, originally intended for F1 drivers taking part in Grand Prix (2 hours of intense physical and mental stress in high temperatures), nevertheless they are relevant to the majority of motor sport ClubSport; Race or Rally events.

The loss of liquid through sweating can reach between 0.5 and 1 litre per hour of driving, depending on the subject and the outside temperature. This loss may lead to a notable reduction in the performance of drivers and greatly jeopardize their safety.

What to drink

For races of two hours or less, the loss of mineral salts is negligible; the best drink, as far as studies have shown is non-aerated water, no serious study has proved the benefit of other liquids. With water, fruit juice may also possibly be drunk, for example fruit juice or tomato juice, it is necessary to drink:

- Before the race
- During the race
- After the race.

For those competitors participating in Endurance races or in Rallies it is recommended that up to 5 litres of liquid be consumed in small doses, the day of a race, depending on climatic conditions for example:

- 1 litre in the morning, before the race
- 2 litres during the race
- 2 litres after the race.

Don't wait until the symptom of thirst appears, it may be too late to avoid dehydration.

General Advice for the Day of the Race.

Do not take the following:

- Alcohol, or
- Food, which is difficult to digest, melon, cucumber, cabbage, onion, spices, rich or fried food.

Avoid taking the following:

- Aerated drinks
- Coffee, tea, (depending on the sensitiveness of the individual).
- Frozen foods
- Large quantities of fruits
- Large amounts of confectionery
- Anything with an unpleasant taste

Recommended are:

- Non-aerated water, fruit juice, energy drinks
- Sugars absorbed slowly (pasta, rice, bread)
- Food absorbed quickly and with high calorific value (dried fruit)

Suggested Menu for the Day of the Race

Breakfast

Have a large breakfast. Drink as much as desired in small quantities.

Before the Race

A small meal if necessary, e.g. bread, cheese, ham, mixed salad or even pasta, 1 piece of fruit, include a few biscuits.

Drinks

About one litre, in split quantities (2/3 water, max. 1/3 fruit juice), spread over the two hours before the race.

Do not forget to urinate before the race.

During the race:

It is desirable, depending on the duration of the race, to fit a liquid dispensing device, the quantity of liquid consumed during the race being 1 litre of water, possibly mixed with low-sugar fruit juice (less than 25g per litre), or an energy drink.

After the race:

Drink plenty of liquid. The addition of a little salt to food will compensate for any loss. A quarter litre of fruit juice replaces the quantity of mineral salts lost in 2 to 3 litres of perspiration, that is to say the maximum lost during a race. Tomato juice has the same properties.

No theoretical or practical studies have justified the use of tablets or special liquids, particularly before the race.

APPENDIX THREE

Clothing

The clothing specified in the MotorSport Manual Appendix Two Schedule A represents the minimum standard of clothing to provide protection against heat and flame whilst having the minimum effect on driver comfort.

Garments must not be tight fitting, as this reduces the level of protection, and they should be comfortable to wear under the actual conditions of use.

Competitors must be aware of the particular vulnerability of neck, wrists and ankles. The neck, wrists and ankles should always be covered by at least two articles of protective clothing.

Choose very carefully all undergarments worn under the specified protective clothing, do not wear any garment that is made from other than non-inflammable material. Wool or cotton fabrics are strongly recommended.

To obtain the maximum protection MotorSport NZ recommends the following for circuit events, hill-climbs and rally special stages;

- All drivers and co-drivers should wear overalls as well as gloves (optional for co-drivers), long underwear, a balaclava, socks and shoes homologated to the FIA 8856-2000(1) standard.
Note: *This FIA Standard specifies garments and apparel to the highest specifications aimed at according the wearer the maximum protection possible.*
- Drivers of single-seater cars in races with standing starts should wear gloves in a high-visibility colour which contrasts with the predominant colour of the car, so that the driver can clearly draw the attention of the race starter in case of difficulties.

Embroidery or badges on overalls.

Embroidery sewn directly onto the overalls should be stitched onto the outermost layer only, for better heat insulation.

Exercise care when sewing on any badges as you could be compromising the efficiency of the garment. The following is strongly advised;

- Backing material of badges shall be flameproof and in conformity with the standard ISO15025 in order to avoid combustion of the badge which would affect the efficiency of the overalls.
- Thread used for affixing the badge to the overalls shall be flameproof and in conformity with the standard ISO15025.
- It is also recommended that embroidery thread on badges or on the outermost layer of the garment be flameproof and in conformity with the standard ISO15025.
- When affixing badges and signs to the overalls, heat-bonding shall not be used and the garment shall not be cut.

Care of Protective Clothing

Keep your protective clothing clean and dry at all times.

After each race or practise session take your overalls off and turn them inside out so that any trapped body sweat dries out quickly. In the event of a fire this body sweat can become super heated steam and cause burns. So it is essential to promote the drying out process whenever possible.

It is a good idea to dry out your gloves and race boots as well.

APPENDIX FOUR

MotorSport NZ Regulations flow chart

