TRIATHLON AUSTRALIA NATIONAL PATHWAYS NETWORK

CYCLING APTITUDE STANDARDS

Skill development framework

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CAS1 Basic Bike Handling

CAS1 consists of the basic skills required to ride and handle a bike in isolation. The ability to execute all of these skills at any given time should be possible before attempting road cycling or draft legal racing. Many of the skills might be repeated many times in any given ride and thus progression can be rapid if rehearsed following fundamental processes.

Skill	**Skill fundamentals** Constant process of skill execution	**Skill Progression** What increased aptitude level might look like	**Skill execution**
Mount	Stand beside the bike with both feet on the ground. Lift one leg over the rear wheel and saddle to become seated with one foot still on the ground and the other foot atop the relevant pedal.	1.Stationary mount. 2.Mount whilst rolling forwards. 3.Fly mount (mount in one leap movement whilst rolling forward).	Knowing exactly where contact points (handlebars, saddle and pedals) are in relation to each other by feel will aid in progression.

Dismount	Immediately after the bike stops moving forward moving one foot from the pedal to the ground. Shift body weight onto that foot. Lift opposite leg over the saddle and rear wheel to then be placed on the ground to become standing next to the bike.	1.Foot comes off pedal and leg moves laterally well in advance of fully stopping. 2.Foot comes off pedal, leg moves soon before fully stopping. 3.Foot comes off pedal, leg moves as bike comes to a full stop.	When placing first foot down a wider stance will provide greater stability.

Clipping bike shoes in	Once mounted, clip the shoe cleats of foot atop pedal in the pedal as efficiently as possible. Begin riding keeping eyesight in the direction of travel as much as possible. Whilst moving forwards clip second cleat into the other pedal.	1.Pedal without clipping in to create momentum, clipping in sighting pedal. 2.Clip in on first pedal stroke as momentum begins while sighting pedal. 3. Clip in on first pedal stroke as momentum begins while feeling pedal and sighting ahead.	Clipping in technique can change slightly across brands, models, etc. Learning to clip in by feel will provide maximum efficiency.

Clipping bike shoes out	Follow the reverse process of clipping in. Unclip at least one shoe whilst moving, soon before the bike stops. Place one unclipped shoe on the ground to stabalise as soon as bike stops rolling. Unclip second shoe.	1.Unclip one cleat and prepare to put foot down well in advance of fully stopping. 2. Unclip one cleat and prepare to put foot down soon before fully stopping. 3. Unclip one cleat and prepare to put foot down as bike comes to a full stop.	Shoe typically unclipped by twisting cleat out of pedal moving heel up to 30° away from the bike.

Balance	Through body's contact point with the bike (handlebars, saddle, pedals) hold body in a central position. Maintain or increase momentum to keep bike upright.	1.Balance maintained with firm hold of handlebars. 2.Balance maintained with little, one handed or no hold of handlebars.	Greater speed offers greater control and ease of balance. Wider hand position on handlebars and lower body position will also increase balance control.

Pedalling	Apply force to the pedals with feet to provide propulsion. Maintain balance.	1.Press pedals downwards for propulsion. 2.Press pedals for much of the down, bottom and up arcs of the pedal stroke as possible.	Applying pressure to pedals for majority of pedal cycle will provide an efficient, circular pedalling motion.

Ride a straight line	Balance. Keep handlebars straight without deviation. Pedal to maintain or increase momentum.	1.Maintain straight line in controlled environment. 2.Maintain straight line in real world environment (eg. on the road, in group race).	As speed increases balance and body position will have greater impact holding a straight line.

Cadence range	Pedal at various cadence (pedalling rate).	1.Use gears to change gears. 2.Use gears to change gears accordingly to environment. 2.Understand ideal cadence for various situations, change gears accordingly to environment. 4.Anticipate environment changes, change gears accordingly.	Cadence will be dictated by gear selection, pedalling output and resistance. Gear and output can be controlled by the rider.

Look around whilst maintaining a straight line	Balance and maintain momentum. Turn head looking back over shoulders and under arms to look to the sides and behind.	1.Keeping both hands on handlebars looking directly behind over right shoulder. 2.Lifting one hand from handle bars allowing both shoulder and head to rotate backwards and look behind whilst maintaining steering control and balance. 3.Lifting one hand from handlebars and placing on shoulder of fellow cyclist directly alongside. Rotate shoulder and head to look behind whilst maintaining steering control and balance from other rider's support.	Tendency for bike to veer in the direction head is turning. Prepare and counter this effect if necessary.

Pedalling out of saddle	Move body from seated to standing Simultaneously shift body weight to handlebars. Pedal. Reverse process back to seated whilst continuously pedalling.	1.Whilst coasting and maintaining straight forward direction, rise out of saddle to have majority of body weight on the pedals. 2.Shift weight from feet on pedals to hands on handlebars, pedal. 3.Use out of saddle pedalling to accelerate or provide an increase in pedalling power.	Counter upper body movement caused by downward pedal stroke by slightly pushing the handlebars laterally away from the downward pedal side. Repeat opposite action with opposite pedal stroke. This handlebar "rocking" will reduce upper body movement and can increase pedal output through bike leverage.

Changing handlebar position (on road bike bars)	Shift upper body weight onto one hand on the handlebars. Move other hand to the flat top, the brake hoods or the lower drops and shift the weight there. Move initial hand to correspond to the other's position.	1.Changing handlebar position one hand at a time, maintaining body weight through handlebars. 2.Lifting both hands from handlebars simultaneously, maintaining torso control, change handlebar position.	Wider handlebar position can increase steering control and brake level access. Narrow handlebar position can increase aerodynamic efficiency and offer a comfortable alternative. Higher handlebar position can provide a comfortable alternative. Lower handlebar position can increase control and aerodynamic efficiency.

Riding one handed	Shift upper body weight onto one hand on the handlebars. Balance and maintain momentum. Lift the opposite hand off the bars.	1.Lifting one hand from handlebar whilst focusing on steering and balance control in a straight line. 2. Lifting one hand from handlebar whilst focusing on steering and balance control around corners or avoiding obstacles.	Press the hand remaining on the handlebars down rather than forwards/backwards to maintain steering control.

Using one hand off the handlebars	Riding one handed use free hand to hold or retrieve objects. Balance and maintain momentum.	1.Retreive objects shifting sight between direction of travel and object (eg bottle). 2.Retreive object in one action without removing sight from direction of travel.	Retrieve bottle, equipment from jersey pocket, etc. As aptitude improves process can be done efficiently by feel rather than sight.

Steering/ cornering	Balance and maintain momentum Subtly shift body weight to either left or right. Simultaneously subtly press handlebar forward on opposite side to weight shift. Eyesight remains on eventual direction as much as possible. Adjust to increase angle of steering or return to straight line direction.	1.Low speed steering through tight, sharp corners. 2.High speed cornering through broad, open corners. 3.High speed cornering through tighter, blind or off-camber (road sloping away from the corner) corners.	At low speed steering control is a major part of straight line riding. Sharper steering angles can be achieved at low speed. As speed increases body weight shift will be a greater steering factor than turning the handlebars and steering angles will need to become broader. W.O.L.L. Wide. Using as much of the available road at turn entry and exit will offer ability to maintain greatest speed. Outside foot. Keep outside foot at the bottom of pedal stroke and press body weight through this pedal. Low. Utalise a low body position through combination of handlebar position, bent elbows and shifting back on the saddle. Look. As early as comfortable look beyond the exit point.

Dodge an obstacle	Balance and maintain momentum Continue in a straight line towards obstacle. With enough time to ensure avoidance change course by leaning and steering away from object. Lean and steer to recorrect direction. Continue in original direction.	1.Dodge an obstacle effectively by steering at low speed. 2.Dodge an obstacle effectively by leaning and steering at high speed.	May require slightly more handlebar steering than simple cornering as long as steering is corrected immediately after avoiding obstacle to correct direction shift.

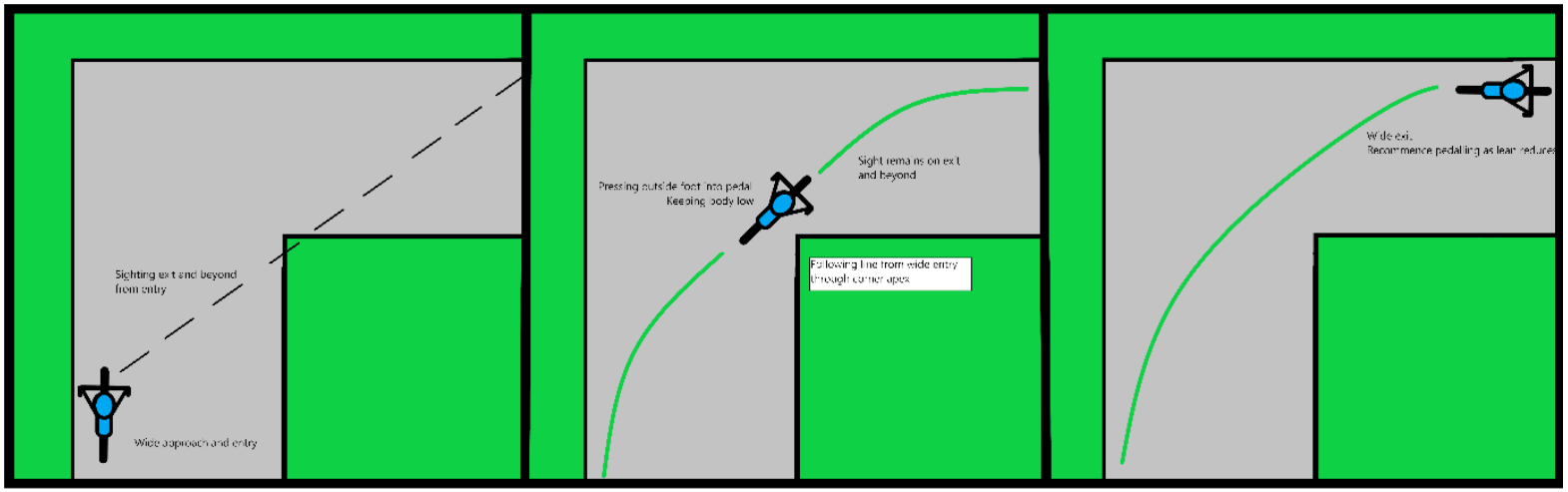
180° U-turn	Steer a safe, sharp angle to complete a full U-turn. Eyesight remains on eventual direction as soon as U-turn commences.		W.O.L.L. Wide. Using as much of the available road at turn entry and exit will offer ability to maintain greatest speed. Outside foot. Keep outside foot at the bottom of pedal stroke and press body weight through this pedal. Low. Utalise a low body position through combination of handlebar position, bent elbows and shifting back on the saddle. Look. As early as comfortable look beyond the exit point.

Changing gears	Pedal. Utilise gear shift levers. Continue pedalling. Continue to utalise gear shift levers on both front and rear derailleurs to achieve desired gear.		Incremental gear changes are most effective. Find desired gear without cross-chaining (big front gear, big rear cog).

Feathering braking	Apply light pressure to both brake levers. Gently release and reapply to control rate of deceleration.		Ideal for gently adjusting the bike speed without completely slowing when approaching a turn or avoiding contact with another rider's rear wheel in group.

Fast braking	Begin moving body weight backwards to be more over rear wheel. At the same time apply both brakes firmly with more applied to front (approx. 2:1 pressure). Release brakes when come to desired slower speed or complete stop. Start pedalling to recommence movement or remove foot from pedal if the bike comes to a standstill to place on the ground directly next to the bike.		Shifting body weigh so that more sits above rear wheel will help avoiding skidding or rear wheel lifting.

Bunny hop	Move at moderate or high speed Slightly bend elbows and knees to lower torso. In a single movement shift bodyweight upwards and pull straight up evenly on the handlebars and pedals so that the whole bike moves upwards and wheels momentarily come off the ground When the wheel reconnect with the ground bend knees and elbows to soften the landing.		Moving at greater speed will allow greater control and effectiveness when bunny hopping. If bunny hopping an object allow front wheel to get as close to object as possible before initiating bunny hop.



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CAS2 Road Cycling

CAS2 consists of the advanced skills required for safe and effective cycling on public, trafficable roads.

Skill	Skill fundamentals	Skill Execution
Understand the rules of the road	Have a full knowledge of the road rules as it pertains to both road cycling and licensed motorist to a minimum standard of a learner car driver.	By law a bicycle is considered a vehicle and has the same road rules as other vehicles. Understanding and obeying these rules is a cyclist's responsibility
Basic bike handling within group on trafficable roads	Understand and perform all the Basic Bike Handling (DLA1) elements within a group (two or more people) on trafficable road types shared with motorists.	See Module 1
Being visible and predictable	Cycle on the road in a position that allows as many motorists and cyclists as possible to see you well in advance of them passing, overtaking or giving way. Make any movements or changes on the road gradually and with as much advance indication as possible.	If possible, make eye contact with oncoming motorists to ensure they've seen you
Riding two abreast	Ride alongside another cyclist so that both handlebars are level. End of handlebars remain within 30cm apart.	
Riding in front in a group	Ride as part of a group or paceline with another cyclist directly behind. Ride smoothly and predictably without sudden changes of direction to avoid touching wheels.	
Riding behind in a group	Ride directly behind another cyclist as part of a group or paceline. Ride close enough that you're within contact but far enough that you can react to braking or obstacles (rear wheel to front wheel between 10cm – 1m depending on conditions).	
Scanning	Constant attention to movements of other cyclist, motorists, conditions and potential hazards. Visually scanning directly in front, further ahead and behind. Listening for motorists and communication from cyclists.	

Communicating group movements	Indicate to other cyclists and motorists via a suitable combination of simple, clear and concise vocal and arm/hand signals of intention to slow, stop, continue, turn or changing from single file to two abreast or vice versa.	
Communicate potential hazards	Indicate to other cyclists and motorists via a suitable combination of simple, clear and concise vocal and arm/hand signals of potholes, debris, traffic and hazardous environmental conditions (wet road, strong winds, etc).	
Understanding specific roles within a group	Have clear knowledge of roles and responsibilities depending on the group.	Each group may operate differently. Understand the common operation. Eg. Those riding at the rear of group are responsible for making calls concerning lane changing and awareness of approaching motorists from behind; those riding at the front are responsible for making calls regarding stopping for traffic and awareness of approaching motorists from ahead.
Making decisions in the interest of the group safety	Depending on particular roles within the group you must have the ability to make judgements based on the group (group size, skill level, speed travelling, etc) and the environment (traffic, weather, etc) that have the safety of the group as the priority and communicate that judgement clearly and concisely.	
Peeling off the front safely	When moving from the front of the group to further back being able to signal intention to move off the front, ensuring there are no hazards approaching from ahead or from the rear (motorist, cyclist) by way of scanning or rear cyclists communicating it is safe to do so. Move to the side of the line enough that those behind can ride forwards past allowing you to slot back into the line further back in the group.	When moving backwards past the group remain as close to the cyclists moving forward as possible within a safe distance.
Eating and drinking while riding	Remove one hand from handlebar and reach for bottle on the frame or food in jersey pocket. Drink or eat with one hand. Return bottle or food remains to frame/pocket.	Maintain balance and momentum. Maintain vision forwards.

Braking on wet roads or loose surfaces	Apply brakes earlier and with less pressure than on dry, clean road.	Brake type will impact braking effectiveness and control.
Cornering on wet roads or loose surfaces	Approach with lower speed at corner entry than on dry, clean road. The amount of body lean will need to be reduced compared to dry, clean road.	Tyre type and air pressure will impact tyre grip and cornering effectiveness and control.

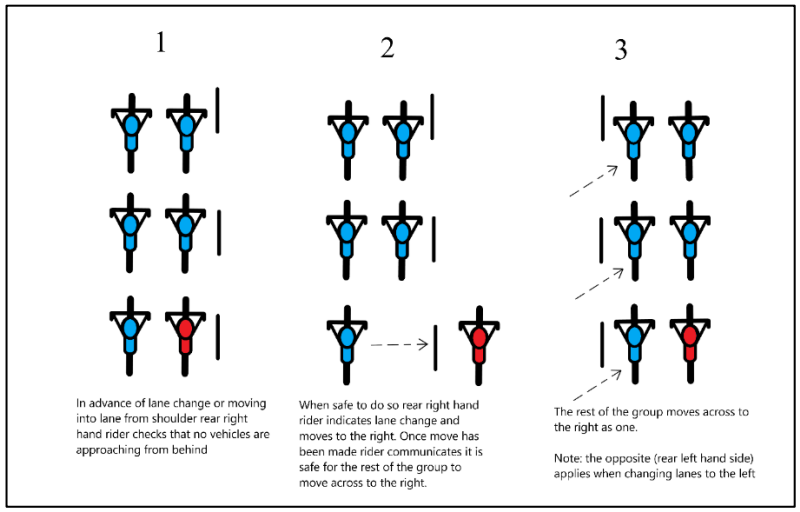

Fig 1 Changing lanes in a group

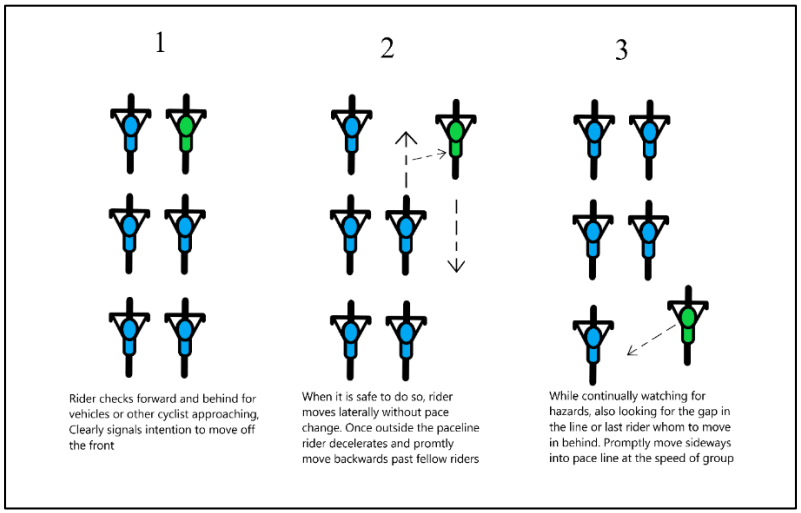

Fig 2 Peeling off the front of a group and retreating to the back

CAS3: Competition Cycling

CAS3 consists of the complex skills specific to cycling performance in competition

Skill	Skill fundamentals	Notes Skill Execution
Group Riding: Teams Time Trial*	Team Time Trial riding involves one single line of athletes where the lead competitor will spend a longer amount of time on the front doing the greatest output and position themselves on the road to most protects other competitors from oncoming wind. Once moving off the front they will move back in the group quickly to gain protection from the new leader.	TTT style is best used when a group has mutual interest in going fast as group. This style also suits groups whose participants may have varied riding strength as it allows for unequal output to be made by different competitors without impacting the group efficiency.
Group Riding: Paceline*	Paceline: Paceline riding is similar to TTT style in that there is one line however a competitor once on the front will spend less time on the front. In this style the leader may position themselves on the road to either provide maximal protection from the wind or to minimise the protection to other competitors depending on tactical objectives. Once moving off the front of the paceline the competitor may move one direction to provide protection from the wind to the competitors behind as they move backwards or in the other direction to provide protection to themselves from the competitors as they move forward and past all depending on tactical objectives. When moving from the front of the paceline backwards a competitor may roll backwards slowly and gradually or decelerate significantly to move backwards and re-enter the line more urgently.	This style is best in scenarios where tactics can impact performance. The style offers opportunity for competitors to force or lead other competitors to output greater work and receive less recovery. This style is often less efficient than other styles as the competitor on the front solely controls the group pace and variance in competitors' strength causes can lead to inconsistent speed. A paceline can reshape in cross winds to maximise drafting potential by taking a more diagonal form.

Group Riding: Rolling Turns*	Rolling turns allows a constant movement between work and recovery and can be an extremely efficient way for a group to move fast if all competitors contribute equally. When riding rolling turns there will typically be two parallel lines of competitors, one moving slightly faster than the other. As the rear wheel of the competitor at the front of the faster line moves past the front wheel of the leader of the "retreating" line they will move laterally to then become the leader of the retreat line, decelerating at the same time to align with the retreat line pace and allowing the next competitor to pass and then retreat.	As with paceline riding, the direction of retreating in relation to wind direction will dictate the nature of the extremes of work and recovery. If a retreat line is more exposed to a crosswind the competitors retreating will provide protection to those moving quicker, narrowing the work-recovery range. Conversely, the work-recovery range will be greater should the retreat line be less exposed to wind than the faster line. Rolling turns can be an efficient group riding style when all competitors abide by the two speeds of the two lines. An effective approach to exploiting the momentum of the whole group rather than relying on individuals.
	*Terms used for group riding styles may vary from area to area/person to person. Styles sit on a spectrum and hybrids of styles may be used to maximum effectiveness.	
Drafting	Position behind another competitor where resistant air is broken and protection from unbroken air is greatest. Position behind and off to the side if there is a wind that forces the protected place to shift away from directly behind the competitor in front. Maintain a consistent speed to avoid making contact of bike wheels both in front and with competitors behind.	Drafting is an effective way to preserve energy and ride at speeds not possible to do alone. Subtle positioning to most protected place can increase the drafting effect even further. This place can change depending on wind direction and can be constantly changing if the wind changes direction or the direction of travel changes. Both observation (of wind) and feel will provide best insight into drafting action and position.
Group positioning	Position self within the group to take advantage of drafting. Position nearby skilled competitors, avoid less skilled or unpredictable competitors. Position for greatest advantage of course and conditions.	Where and the manner in which a cyclist rides within a group can have profound impact on performance. Increasing understanding of group dynamics and competitors will allow greater ability to position for greater performance.
Gear selection	Understand own optimal cadence and power output abilities (using technology and/or by feel)	Effective gear selection allows an athlete to capitalise on the maximum amount of exerted energy transitioning into propelling the bike.

	Understand competition context (course, distance, competitors, impact on run quality etc). Shift to required gear in due time.	Execution of efficient gear selection will also minimise output-to-return ratio and promote recovery.
Time Trial Pacing	Understand own optimal cadence and power output abilities (using technology and/or by feel). Understand competition context (course, distance, competitors, impact on run quality etc). Understand own position for optimal power output and aerodynamic balance.	In the event of riding without a group or with a group that is not able to benefit an athlete's speed the ability to gauge output over a given distance to produce the fastest relative time (bike & run combined).