RisingStars Phase 2:
Talent Assessment Protocol

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TRIATHLON CANADA RISINGSTAR ASESSMENT TEMPLATE

OVERVIEW

Determine what IST providers are involved with athlete assessments. Assessments are tiered based on primary, secondary and tertiary needs.

Please make an effort to assess primary needs first, then secondary needs and finally tertiary needs once all others are well managed.

1. Health & Wellness
    - Sport Medical
    - Dietician
    - Mental Performance Consultant
2. Physical Literacy
    - Physiotherapist
    - Strength and Conditioning
3. Sport Technical:
    - Swim
    - Bike
    - Run
4. Sport Performance
    - Aerobic
    - Economy of Motion
    - Anaerobic
    - Peak Power

Note that ideally it is best to use providers that have ongoing involvement with the team

Facilities and EQUIPMENT

MD

- private exam rooms
- laptop/iPAD per MD,
- stethoscope,
- otoscope,
- ophthalmoscope,
- goniometer,
- measuring tape,
- eye chart,
- urine dip sticks,
- prescription pad,
- lab requisition,
- masking tape,
- scales for height and weight

Physiotherapy:

- private exam rooms
- Physio table
- goniometer,
- measuring tape

S&C

- Exercise floor or multipurpose room
- FMS kit (home made ok)
- Physical literacy aids
- Foam rollers, physio balls, thera bands

Physiologist:

- Testing lab as required
- Evaluation tools as required

Dietician:

- private consulting rooms
- table and chairs
- dietary analysis software

Mental Trainer:

- private consulting rooms (ideally no windows)
- table and chairs or couch

Sport Technical: Swim

- 25 m pool

- Video (consider video analysis apps i.e. Ubersense)
- Laptop
- Technique checklist

Sport Technical: Bike

- ➢ Multipurpose room
- ➢ Outdoor bike loop
- Power meter for trainer or rollers
- Video (consider video analysis apps i.e. Ubersense)
- Tape measure
- Goniometer
- Laser level(s)
- Technique checklist

Sport Technical: Run

- ➢ Lab or treadmill room
- ➢ 200-400 m track
- Treadmill capable of 22 km/hr
- Padding around treadmill
- Video (consider video analysis apps i.e. Ubersense)
- Technique checklist

IST REPORTING

Triathlon Canada reporting follows a simple SOAP note format. SOAP is an acronym for subjective, objective, assessment, and plan. It is the method of documentation adopted by Triathlon Canada to track notes in an athlete's LTAD progress.

Subjective component

An initial review of the athlete is made relative to the IST member's area of specialty.

If this is the first time an IST provider is seeing an athlete, the IST provider must prepare a history. This describes the athlete's current condition. The history or state of experienced relevant symptoms are recorded in the athlete's own words. It includes;

- All pertinent and negative signs / symptoms under review
- Pertinent athlete history
- Intervention history
- Family/Social/Program history

Subsequent consultations for the same problem briefly summarize the history of the present condition, including pertinent testing + results, referrals, prescribed solutions, outcomes and follow-up.

- Location
- Onset (when and mechanism of injury - if applicable)
- Chronology (better or worse since onset, episodic, variable, constant, etc.)
- Quality (sharp, dull, etc.)
- Severity (usually a pain rating)
- Modifying factors (what aggravates/reduces the symptoms - activities, postures, drugs, etc.)
- Additional symptoms (un/related or significant symptoms to the chief complaint)
- Treatment (has the patient seen another provider for this symptom?)

Objective component

The *objective* component includes:

- Relevant empirical measurements outlined for each IST provider
- Findings from evaluations.
- Results from laboratory and other diagnostic tests already completed.

Assessment

A diagnosis for the purpose of the IST assessment is a quick summary of the patient with main symptoms/diagnosis including most probable cause and a list of less probable causes.

It is the patient's progress since the last visit, and overall progress towards the patient's goal from the physician's perspective. When used in a Problem Oriented Medical Record, relevant problem numbers or headings are included as subheadings in the assessment.

Plan

This is what the IST provider does to address the athlete's Gold Medal Profile gaps. Tasks such as ordering further assessments, behavioural changes, referrals, technique changes, equipment modifications and education provided.

The plan should address each GMP gap identified. A note of what was discussed or advised with the athlete as well as timings for further review or follow-up are generally included.

The take home message associated with each task must be clear, concise and unambiguous. A targeted completion date must be assigned to complete the goal setting process for each task.

Reporting Standards

1. Backup all data; written or hardcopies where appropriate and back up data to secondary locations at all times
2. Written reports must be kept until all electronic copies are confirmed as received
3. Reports must be editable in Excel or Word- no PDFs
4. All final reports must be submitted electronically within 24 hours of assessment
5. All final reports must be written in clear language, please minimize the use of technical jargon, acronyms or abbreviations.

Coaches and athletes must be able to understand the information for it to be useful

Reporting levels

NSO level

- All reports submitted to NSO IST lead
- Enrol each athlete in CAMP
- Enrol each provider in CAMP and ensure each has access to the team being screened

PSO level

- All reports submitted to PSO IST lead

Health and Wellness

SPORT MEDICAL

Prior to screening day, have athletes complete Athlete Pre-participation Medical, Sleep Screening and Athlete SCAT 3

Day 1 of assessment, arrange for athletes to have **screening blood work and ECG** by providing requisitions from the MD for athletes to attend local lab OR arrange for a technician to come to the athletes to do blood draws and ECG's. Screening blood is recommended every 6-12 months. ECG is recommended every 2 years.

Allow 60 minutes/athlete for MD assessment to include review of Athlete Pre-participation Medical, Sleep Screen, remainder of SCAT3, athlete physical examination.

If athletes have significant health concerns, please allow 90-120 minutes/athlete. This may include injuries, poorly controlled asthma, para classification documentation, underperforming etc.

Things to bring:

- Medical history from family and Sports MD,
    - prescriptions,
    - injuries,
    - illnesses,
    - surgeries,
    - concussions,
    - allergies, etc.
- Athlete Pre-participation Medical, SCAT3 and Sleep screen.

Mental Performance

Experience with Mental Performance						
Mental General Information						
Learning style						
		1	2	3	4	5
Kinesthetic						
Verbal						
Visual						
Lifestyle balance						
		importance				
	hours	1	2	3	4	5
School						
Work						
Sport						
Social						
Sleep						
General mood/mental health						
Mental Performance Recommendations						
Follow up tasks	Yes (please list below)			no		

Nutrition

4 Day Food Record

Instructions:

A Food and Training Diary can be a useful tool if used correctly. It is a bit like having a video made of your technique because it gives you a chance to look at what you REALLY do, rather than what you THINK you do. The Food and Training Diary can only be useful if it is a true indication of your typical eating and training habits. Be honest and follow the following guidelines:

- Fill out the diary for 4 days including a training day, one day of the weekend and one additional day
- Also record all training/exercise participated in for those 3 days also
- Carry the diary with you at all times and write everything down as it happens. (Don't rely on memory at the end of the day).
- Stick to your usual eating habits when you are recording. Don't eat better than usual to impress us. Don't only eat foods that are easy to record.
- Remember to include all the things that you add to food when eating or cooking (eg. margarine, oil, sugar, dressings).
- Please remember to describe foods in as much detail as possible (eg. white/wholemeal, fat left on/trimmed off, sweetened/unsweetened, full cream/reduced fat).
- List the ingredients and special features of mixed dishes such as pizza, pasta sauce, stir fries, casseroles.
- Record the quantity of foods and fluids as accurately as possible. You can get measures from packages of food (ex/ 500 mL container of chocolate milk) or you can also use any of the following visual measurement tools:

Food	Portion Size/Serving
Vegetables	1 serving = size of a baseball 1 cup salad = 2 handfuls
Fruit	1 serving = size of a baseball ½ cup canned fruit = 1 standard light bulb 1 ounce dried fruit = 1 golf ball
Grains/Starch	1 cup rice/pasta/alternative grains/corn/cereal or 1 medium potato = 1 medium sized fist 1 muffin = size of a baseball
Milk or Milk Alternatives	1 cup = size of a baseball
Yogurt	½ cup = size of a computer mouse
Cheese	1.5 ounce = 2 dice or your index and middle finger length and width
Meat/Tofu/Fish	3 ounce = palm and thickness of hand or a deck of cards
Cooked Legumes/Beans	½ cup = size of a computer mouse
Nut Butter	2 Tbsp. = 2 thumbs or 1 golf ball

Added Fats (butter/non-hydrogenated margarine, oil, salad dressing)	1 Tbsp. = tip of thumb
Snack foods - **nuts and seeds, small candies/chocolates** - **chips or pretzels**	- 1 ounce = 1 small handful - 1 ounces = 2 small handfuls

Only record food and fluid that is actually been eaten and drank. Don't record everything you put on your plate if you leave some behind.

DAY 1

Meal/Snack	Time	Food Choice	Amount
Breakfast			
Snack			
Snack			
Lunch			
Snack			
Snack			
Dinner			
Evening Snack			
Supplements			

Training Schedule

Name:

Date:

Day	Time	Activity	Intensity*	Duration
Monday	7am	Run	Vigorous	45 min
	4pm	Weights	Vigorous	60min

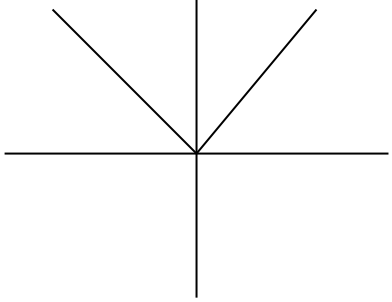
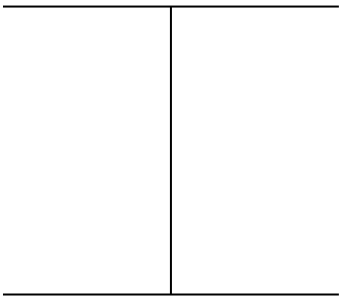
Moderate - Able to talk but not sing during activity

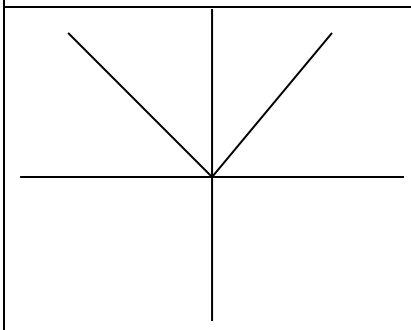
Vigorous - not able to say more than a few words in a row without pausing for a breath

Physical Literacy and Functional Movement

Physiotherapy

The primary concerns in biomechanical assessment are asymmetries (left-right and anterior-posterior)

Athlete Name		
Date		
Past Injury History:		
Chronic Issues:		
Current Complaints:		
Standing:		
Posture	Arches	Heels
	Knees	Hips
	PSIS	ASIS
	Spine	
	Shoulder blades	
	Shoulders	
	Head	
	Others	
Lsp ROM		
		
S-I joint : kinetic test:		
Single Leg Squat		
	Left:	Right

Knee alignment		
Trunk position		
Ankle ROM (measure toe to wall in cm)		
Heel Raise (knee ext / knee flexed)		
Full squat		
Hop Squat		
Shoulders		
	Flex:	
	Abd	
Sitting		
Thoracic	Right	Left
ROT		
SF		
Slump Test		
C spine: ROM:		
	Resisted right rotation	
	Resisted left rotation	
Shoulders		
	Right	Left
Flex		
Abd		
STR		
Muscle firing		
IR		
ER		
S-spin		

Stability				
Sulcus				
Ant				
Post				
Resisted knee extension	0°	30°	60°	90°
Left				
Right				
Supine				
	Right		Left	
Thomas Test				
1. Iliopsoas				
2. ITB				
3. RF				
HS Length				
Lat. Length :				
Supine Hip ROT				
IR				
ER				
Flex + Add				
Fabers				
Muscle firing				
IR				
ER				
Flex				
Psoas				
Patella				
Glides				
Compression				
Palpation				
Ligament test				
Resisted ankle mvts				

Inv	in DF		
	in PF		
Eversion	in DF		
	in PF		
ASLR			
	Active		
	Resisted		
Bridge			
Deep neck flexors			
ULTT – med/radial/ulnar			
		Right	Left
	Shoulders (90° Abd)		
	IR		
	ER		
Prone			
	Hip extension		
	Active		
	Resisted		
Lower trapezius strength			
Blackburn sequence			
Spinal palpation			
Side lying			
		Right	Left
Hip abduction strength			
	In flexion		
	In extension		

SUMMARY AND RECOMMENDATIONS

ATHLETE NAME	
DATE	
HISTORY	
CHRONIC ISSUES	
CURRENT ISSUES	
FINDINGS	
OBSERVATION	
MOBILITY	
CONTROL	
STRENGTH	
THERAPY NEEDS FOR FOLLOW UP	
EXERCISES	
STRENGTHENING	
MOBILITY	

STRENGTH & CONDITIONING

Functional Movement Screen (FMS) using Gray Cookson methodology. Clearance for sport specific training is collective score of 14/21, with no scores of 0.

Primary concerns in S&C assessment are; core strength and core stability, asymmetries (left-right and anterior-posterior), movement sequencing (core to extremities).

The jump height progression should be; non-counter movement jump, counter movement jump then counter movement jump with arm swing

CATEGORY	MEASURE	SIDE	SCORE	FMS	UNITS
Anthropometry	Height				cm
	Weight				kg
FMS	Deep Squat				0-3 scale
	Hurdle Step	L			0-3 scale
		R			0-3 scale
	Inline Lunge	L			0-3 scale
		R			0-3 scale
	Shoulder Mobility	L			0-3 scale
		R			0-3 scale
	Torso Stability				0-3 scale
	Rotary Stability	L			0-3 scale
		R			0-3 scale
	Prone Rotation*	L			0-3 scale
		R			0-3 scale
Jump Tests	Single Leg Hop and Stick	L			Pass/Fail
		R			Pass/Fail
	CMJ[1]				cm
	NCMJ[2]				cm
	CMJ w arms[3]				cm
Muscular Endurance	Max Inverted Row				total
	Max Pushups				total
	Max Single Leg Squat to Bench	L			total
		R			total
	Max Pushups				total
	Plank[4]				time

*** Prone longitudinal rotation**: prone on BOSU in streamline position rolling L then R initiating from core and maintaining segmental stability and connection

1. CMJ: counter movement jump; drop down and jump
2. NCMJ: non-counter movement jump; hands on hips
3. CMJ w arms: counter movement jump with arm swing
4. Max duration 3 minutes

Sport Performance: Biomechanics

Sport technical skills are governed by three primary rules of biomechanics;

1. If the technique **causes injury** or has a higher risk of injury it is incorrect
2. If the technique is less **effective** at accomplishing the task at hand, it is incorrect
3. If the technique is **less efficient** (i.e. higher metabolic cost for same power or speed) in an individual, it is incorrect

Keep in mind that;

- Swim technique will impact bike and run performance,
- Bike technique will impact swim and run performance, and
- Run technique will impact swim and bike performance

With each sport technical assessment use the simple acronym **F.A.S.T.** to evaluate the movement patterns;

F focus and head position

A arm (and leg) positions

S stability in the core

T timing of the movements

Swim F.A.S.T.

1. **FOCUS**

   Mental awareness and head position

2. **ARM POSITION**
   a. **Recovery**

      As the arm recovers out of the water there is a path that it should follow. This is best illustrated by taking a picture as the arm passes the shoulder. In this moment the hand, elbow and shoulder should all be in line together. The arm recovers wide and relaxed in order for this to occur.

   b. **Catch**

      The catch is critical in order to have the right arm position for the push phase of the pull. The catch does not need to be strong or fast. It needs to be done slowly and correctly in order to have a proper acceleration phase that produces power.

      Look for the hand to be the lowest point at the catch phase. The elbow is higher than the hand and the shoulder is higher than the elbow. The fingers should clearly be pointing downward. Also the armpit needs to be open in order to use the lats effectively. The scapula is a supressed as possible.

3. **STABILITY**

   Optimal streamline position demonstrating longitudinal and lateral core strength along with shoulder flexibility

4. **TIMING**
   a. **Recovery**

      If the hand reaches the shoulder prior to the elbow it is often caused by an over acceleration of the hand as it exits the water. This leads to a lack of symmetry with the arm in the water and therefore reduced power in that pull.

      If the hand is ahead of the elbow it is also a leading cause of shoulder issues. It leads to an impingement of the shoulder and a compromised catch position for the pull.

   b. **FINISH**
      The “pull” in freestyle is actually a misnomer. The significant work is actually done through pushing the water, not pulling it. It is critical to get the most out of the push. A picture caption of the finish should show the arm finishing all the way to the hips before the elbow lifts out of the water. Much like a triceps pull-down the elbow needs to be suppressed and stabilized in order for the pull to be the most effective.

Bike F.A.S.T.

1. **FOCUS**

   Mental awareness: safety, tactics, etc.

2. **ARMS & LEGS**

The positioning of the rider on the bike is an ongoing discussion between triathlon coach, physiotherapist, sport technical coach and biomechanist (or bike fitter).

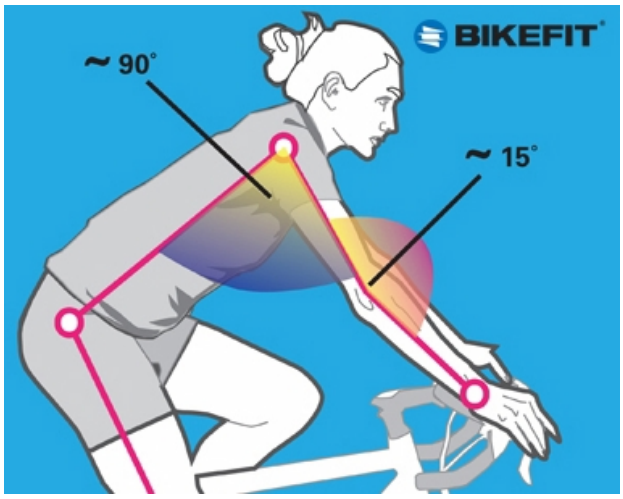
Keep in mind that the volume on the bike has big effects on swim and run performance if the bike fit is incorrect for triathlon performance.

See http://bikefit.com/s-13-road-bikes.aspx for baseline summary

a. **Arms**

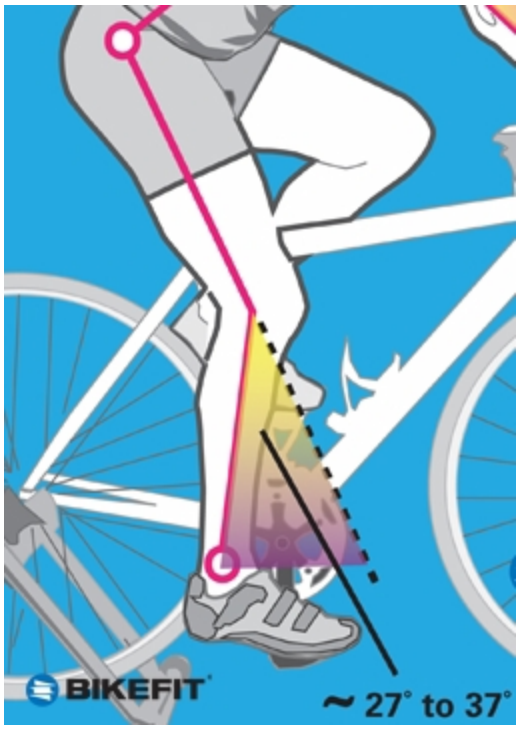
   Elbows flexed 15-20º, arms parallel, wrists straight, shoulders relaxed.

   When in drops, elbows flexed at 90º results in no overlap between knees and elbows.



b. **Legs**

   Knee flexion at 143-153º at bottom dead centre. Should allow for optimal ankle stability through top, front and bottom quadrant (minimal change in heel to pedal axle height)



c. Feet

Cleat positioned to allow minimal L-R knee tracking

d. Saddle

Cleat positioned so vertical line from patellar tendon insertion (under kneecap on shin) passes through pedal axle

~Parallel to ground (<3º downward incline)

Width appropriate to *ishial tuberosity* width (sit bones)

ITU saddle set back relative to BB observed (> 50 mm men and 20 mm women)

f. Torso

Pelvis stabilized well on saddle with slight anterior tilt. Torso angled to allow torso-upper arm angle to be ~90º

g. Head

Facing forward

3. STABILITY

There are three key points of support in cycling; bars, saddle and pedals

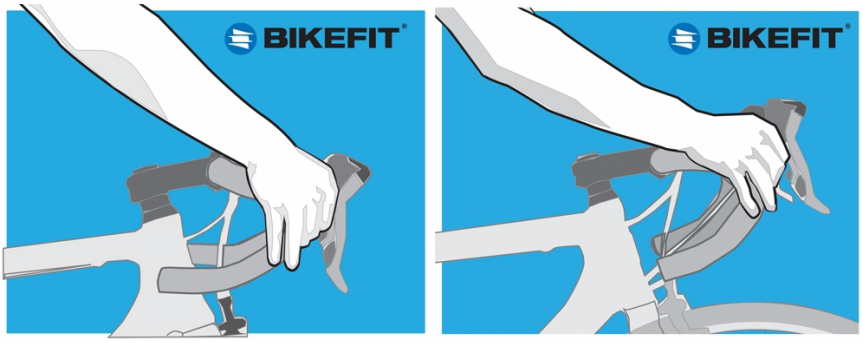
a. Bars

1-2 cm wider than shoulder centre to centre to allow upper back and shoulder stability.

Aero bars do not extend ahead of brake levers

Brake hoods parallel to ground from flat tops of bars

Brake reach and bar curvature appropriate for hand size



b. Saddle

Check structural integrity (rails, shell, cover);

Saddle condition: No older than 2 years and never crashed,

c. Pedals

Cleats: clean, minimal wear and <4 months old

Shoe fit; length and width

Shoe condition: age, wear, maintenance

4. TIMING

a. Movement sequence

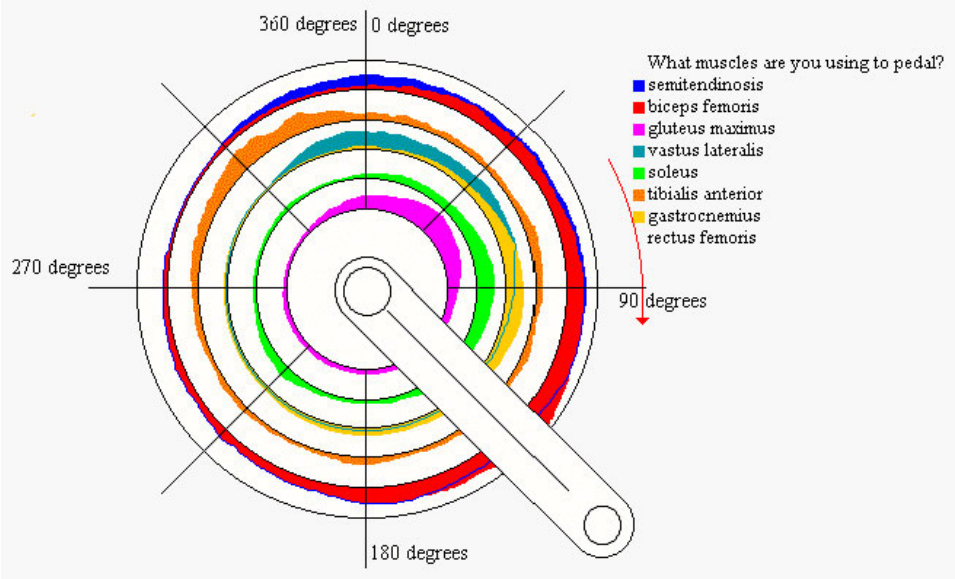
All cycling movements are sequenced from core to extremities; hip, knee then ankle

b. Pedal stroke

The pedal stroke is a full 360º motion broken into 4 quadrants;

- Across bottom; bottom 90º of pedal stroke (135º-225º)

- Upstroke; back 90º of pedal stroke (225º - 315º)
- Across top: top 90º of pedal stroke (315º - 45º)
- Down stroke: front 90º of pedal stroke (45º - 135º)



c. Quadrant pairing

The left side pedal stroke affects the right and vice versa i.e. back right and front left

Equipment check

ITEM	RANGE		
saddle	narrow	good	wide
saddle age/wear	old		new
shoe length	short	good	long
Shoe width	narrow	good	wide
shoe age/wear	old		new
saddle height	low	good	high
saddle tilt	Nose up	flat	Nose down
bar width	narrow	good	wide
bar curve	tight	good	big
Bar reach	short	good	long
brake placement	Tilt down	flat	Tilt up
bar height : saddle	high	Good	low
crank length	short	good	long
stem length	short	good	long
saddle fore/aft	forward	good	back

Bike description

Make	
Model	
Age	
Frame size	
Components	
Power meter	
Training wheels	
Race wheels	
	* phase out use of tubulars

Maintenance

	pass	fail
Cleanliness		
Drive train shifting/wear		
Brakes function/wear		
Saddle		
Handlebars		
Pedals		
Cleats		
Tires		
Training wheels		
Race wheels		

Run F.A.S.T.

1. **FOCUS**
    a. Mental awareness and head position
2. **ARM CARRIAGE**
    a. Hand always above elbow
    b. Elbows low
    c. Arm swing parallel to direction of travel
3. **STABILITY**
    a. Pelvic angle stable with slight anterior tilt
    b. Shoulders positioned over hips
    c. Head positioned over shoulders and hips
4. **TIMING**
    a. Arm swing timed to coincide with leg push off
    b. Support knee and recovery knee parallel at first occurrence of full weight transfer

Run Equipment

Training shoes	
Pairs	minimum 2
Make	
Model	
Size	
width	
age	<6 months
Kilometers / hours running	

Race shoes	
Pairs	
Make	
Model	
Size	
width	
age	<12 months old
Kilometers / hours running	<100 km use

Sport Performance: Physiology

Sport Performance testing is broken down into fitness testing and performance testing. With knowledge of fitness measures we can direct training interventions to induce key adaptations. Typically, fitness testing minimizes sport technical, psychological and tactical variables. Conversely, knowledge of performance measures suggests how an athlete will do in competition.

Easily administered field tests are much more valuable in tracking athlete progress than laboratory tests. It is much more valuable to track fitness changes every 4-8 weeks than visit a laboratory twice a year.

Appendix 4 has a sample protocol for cycling power profile including economy of motion

Fitness measures

Fitness measures are often associated with attempts to isolate one energy system. Estimates are possible for aerobic, anaerobic or pure speed. Power measures usually refer to the highest values possible from a given energy system, while capacity measures refers to the sustainability at some reduced level.

Aerobic Power
Peak aerobic power estimates (peak oxygen consumption rates) are easily obtained in two ways;

1. A 2-3 minute maximal effort gives the highest velocity/power associated with a peak aerobic power effort. Highly trained individuals can achieve peak aerobic power in ~90 seconds to 2 minutes, with longer durations required for athletes whoa re not familiar with maximal efforts
2. A 6 minute maximal effort gives the lowest velocity/power required to elicit a peak aerobic power response. This effort level is best used when looking for an aerobic power training stimuli with less fatigue (i.e. 6 x 1 minute at 6 min effort level on 1 min recovery)

Aerobic Capacity
The ability to sustain submaximal aerobic efforts is very important in endurance competition. Measures of best average power or speed over 20-30 minutes are often used as well as anaerobic threshold estimates.

Sub-maximal Aerobic Capacity
Submaximal aerobic capacity is even more important in endurance performance. Measures of best average power or speed at 2 mmol & 4 mmol lactate are cornerstone measures here.

Any protocol that encourages technical mastery in steady state stages of 4-6 minutes will serve for a sub-maximal test. Efforts in these evaluations can not exceed average HR, power of speed expected in ~20+ min race effort (i.e. 1500 m swim, 20k bike and 10 k run

i.e. 5-8 x 400 m swim on 5 min recovery (recording SC/SR, HR, lactate, pace)

STAGE	Pace relative to P_{1500m}
1	10-16 sec / 100
2	8-14 sec / 100
3	6-12 sec / 100
4	5-10 sec / 100
5	4-8 sec / 100
6	3-6 sec / 100
7	2-4 sec / 100
8	1-2 sec / 100

or

STAGE	Pace relative to HR_{10k}
1	-80 beats / min
2	-70
3	-60
4	-50
5	-40
6	-30
7	-20
8	-10

Anaerobic Power
Peak anaerobic power is measured using a 30 second maximal effort. Any distance that is approximately 30 seconds in duration will serve (i.e. 50 m swim or 200 m run)

Anaerobic Capacity
The ability to sustain repeat submaximal anaerobic efforts is not as important in triathlon as other sports. However, it should not be neglected especially on the bike.

Peak Power
Peak power is measured using a 6-7 second maximal effort. Any distance that is approximately 6-7 seconds in duration will serve just as well (i.e. 10-15 m swim or 50 m run)

Performance measure

While triathlon is predominantly an aerobic event, at the Olympic and WTS level it is not a sustained steady state effort. The energy demands are much broader than a simple sub-maximal aerobic effort, and these vary a great deal with competition skills,

especially on the bike and swim where drafting and tactics play a huge role in energy demands. As such, knowing an athlete's abilities across the full spectrum

Economy of Motion

Economy of motion is the combination of physiology, technical, tactical and mental skills. The relationship between heart rate and effort should be linear. As performance skills improve HR increases by less between any two efforts.

A typical economy of motion evaluation involves a series of progressive efforts each lasting ~4 minutes at efforts that allow a relatively steady heart rate within each effort. i.e. 5 x 4 min bike at HR 100, 110, 120, 130, 140

Performance standards
Performance standards are an integral part of the Triathlon Canada Gold Medal Profile.

Competitions
Competition experience is critical to the Triathlon Canada Gold Medal Profile.

APPENDIX 1 | SAMPLE FOOD DIARY

Here is a sample of the detail required in the food diary

Meal/Snack	Time	Food Choice	Amount
Breakfast	**7:00 am**	Whole wheat bagel Peanut butter Banana Fruit juice	1 2 Tbsp 1 Large 2 cups (large glass)
Snack	**9:30**	Granola bar (Quaker oat chocolate chips) Apple Water	2 1 1/2 a 750 ml bottle (3 cups)
Snack	**11:00**	NOTHING EATEN Water	 500 mL (2 cups)
Lunch	**12:30 pm**	Subway Sandwich on whole wheat bread with roast beef, veggies, cheese, mayo and mustard Chocolate milk	12 inch sub 500mL (2 cups or 1 large container of chocolate milk)
Snack	**2:00**	Potato Chips – salt and vinegar Chocolate milk Water	5 large handfuls 500 mL (2 cups) 1 large water bottle (750mL)
Snack	**5:00**	Grilled Cheese sandwich on white bread with cheddar cheese	2 slices bread 4 slices of Kraft sliced cheese
Dinner	**7:00**	Pasta (white) Tomato sauce Mixed Veggies (sweet peppers, mushrooms, zucchini) Lean ground beef White milk water	3 cups (3 large fists) 3 cups (3 large fists) 3 handfuls 6 ounces 2 cups (500 mL) 500ml (2 cups)
Evening Snack	9:00	Chocolate chip cookies Vanilla low-fat yogurt	4 cookies 1 cup
Supplements		Multi-vitamin/mineral	1 a day

APPENDIX 2 | ANALYSIS OF ROAD CYCLING TECHNIQUE

Athlete:		Date:	

Area for analysis	Description of ideal performance		
1. Subjective: Underpinning knowledge			
2. Observation			
3. Assessment	**FLATS**	**UPHILL**	**DOWNHILL**
3.1. Safety			
3.2. Group skills			
3.3. Line of travel			
3.4. Body position			
3.5. Braking			
3.6. Pedalling			
3.7. Cornering			
4. Plan			

APPENDIX 3 | SAMPLE BIKE PROTOCOL

ECONOMY of motion + WARM UP						
START	**END**	**DURATION**	**OBJECTIVE**	**HR**	**RPM**	**Power**
0:00	4:00	4 min	Economy	100	110-120	
4:00	8:00	4 min	Economy	110	110-120	
8:00	12:00	4 min	Economy	120	110-120	
12:00	16:00	4 min	Economy	130	110-120	
16:00	20:00	4 min	Economy	140	110-120	
POWER PROFILE						
START	**END**	**DURATION**	**OBJECTIVE**	**HR**	**RPM**	**Power**
20:00	20:06	6 sec	Peak Power 1	MAX	130+	MAX
20:06	22:00	1:54 min	recovery	-NA-	100-110	low
22:00	22:06	6 sec	Peak Power 2	MAX	130+	MAX
22:06	24:00	1:54 min	recovery	-NA-	100-110	low
24:00	24:06	6 sec	Peak Power 3	MAX	130+	MAX
24:06	26:00	1:54 min	recovery	-NA-	100-110	low
26:00	26:30	30 sec	Peak Anaerobic Power	MAX	120+	MAX
26:30	36:00	9:30 min	recovery	-NA-	100-120	low
36:00	42:00	6 min	Peak Aerobic Power	MAX	110-120	MAX
WARM DOWN						
START	**END**	**DURATION**	**OBJECTIVE**	**HR**	**RPM**	**Power**
42:00	52:00	10 min	Warm down	-NA-	90-110	low

1. Data collection details
    a. Pacing details
    b. peak / average power
    c. peak / average cadence
    d. pedal stoke observations
    e. left / right analysis