



TA / AIS TRIATHLON MUSCULOSKELETAL SCREENING

Triathlete	
Triathlete's Email Address	
Preferred Race Distance	sprint / Olympic / long course / ironman
Year Started Sport	D.O.B:
Screening Practitioner	Date of Screen:
Coach	Mob:
Treating Doctor	
Treating Physio.	
Training Load – Swim	
- Cycle	
- Run	
- Ride / Runs	
- Weights / Others	
Changes in Bike Set-Up?	When? What?
Do you wear orthotics?	Trainers / Flats: How Old?
Maintenance - Areas of Tightness?	
- Areas of Weakness?	

Current Injury:

Are you currently injured? (modified training) Yes/No

Diagnosis: _____

Treatment: _____

Managing practitioner: _____ Ph No: _____

Investigations to date: _____

Previous Injuries / Surgery: (injuries that have modified training > 1 week)

Date: Injury / Surgery
 ___/___/___ _____

___/___/___ _____

___/___/___ _____

___/___/___ _____

Other Relevant Information:



STANDING

POSTURE (comments)

Ankle Dorsiflexion	_____ cm	_____ cm
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(knee to wall, keep heel contact, knee over 2nd toe, measure toe to wall)

LUMBAR MOVEMENT

Flexion	Normal	Stiff	Pivots @	Deviate L/R
Extension	Normal	Stiff	Pivots @	Deviate L/R
R Side Bend	Normal	Stiff	Pivots @	Stiff Below
L Side Bend	Normal	Stiff	Pivots @	Stiff Below

CONTROL

SL Balance R	SECS (measure time to first touch down or stance forefoot and/or heel moves)			
(eyes shut) L	secs			
SL Squat R	Stable	Pron. / IR'd.	Pelvic Drop	Ant/Post Tilt
L	Stable	Pron. / IR'd.	Pelvic Drop	Ant/Post Tilt
Hip Flexion R	Range _____° (measure standing hip flexion range before hitching / post. rot.)			
L	Range _____° (and assess SIJ via stork test as well)			
Hop R	Stable	Pron. / IR'd.	Pelvic Drop	Ant/Post Tilt
L	Stable	Pron. / IR'd.	Pelvic Drop	Ant/Post Tilt

SITTING

Comments

Sh ABD ROM in IR	Right _____°	Left _____°	
Sh Impinge Test	Right OK / pain	Left OK / pain	
Thoracic Rotation (arms folded across chest)	Right _____°	Left _____°	
Slump	Right _____°	Left _____°	
Resisted Hip Flex	Right OK / Poor	Left OK / Poor	

Mod. Thomas Test (circle if tight)

	Left °	Right °
Hip ext		
Hip add		
Hip abd		
Knee flex		

(test knee flex with thigh horizontal)

SUPINE

		Left°	Right°
SLR			
AKE			
Glut. Flexibility (ER in 90 F/Add)			
HIP IR (90° Hip Flexion)			
Ankle PF			
Sub-talar Jt (hypo/hyper/NAD)			
Mid-Tarsal Jt (hypo/hyper/NAD)			
1st MTP Jt (hypo/hyper/NAD)			
Pelvis Squish Normal			
Squish Blocked			
Comment on Alignment			
Abs Double Leg Lower		_____ ° (angle from horizontal when spinal stability lost)	
Single Leg Bridge		OK / Poor	OK / Poor
Palpate	TFL	Pat.Tendon	Patella
(comments)	Tibia	Navic.	Plantar Fascia Achilles

SIDE-LYING

Glut.Med. Strength	Left OK / Poor / TFL dom	Right OK / Poor / TFL dom
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PRONE

	Left°	Right°
Combined Elevation		
Scap. Stab. Test <small>(swim catch posi, resisted sh. flex / IR)</small>	OK / Poor	OK / Poor
GH Int Rot'n (active)		
Gluteal Firing (circle)	Lx ES OK/poor Gluts 1 st Hams 1 st	Lx ES OK/poor Gluts 1 st Hams 1 st
Pelvis Upslip / Downslip		
Sacral Torsion		
Feet (comment if Podiatrist review is necessary)		



Musculoskeletal Assessment Screening Report Date __ / __ / __

Athlete: _____ Email Address: _____

Screened by: _____ Email Address: _____

Positive Findings

Recommendations

Flexibility eg Tight Hamstrings

Stretch Hamstrings

Strength / Stability

Others

Prevention Program Implemented: Y / N

Report Emailed: Y / N

Coach Contacted: Y / N



TA – AIS TRIATHLON MUSCULOSKELETAL SCREENING

SCREENING PROTOCOL

- The following screening should take approximately 45 minutes to complete (30 minutes for physical testing; 15 minutes to explain / demonstrate individual exercise program)
- Use as a guide only. Physiotherapists are to use discretion based on each Triathlete's injury history and presentation.
- Use initial interview to determine priorities for screening and then focus attention to specific body parts and potential injury risk factors.
- The Physiotherapist can deviate as required from the standardised screening tool when specific body areas need to be assessed in more detail based on current or past injuries.
- After the screening is complete, the Physiotherapist should implement an individually-tailored injury prevention program with the Triathlete.
- To ensure program compliance, only 4-6 exercises that rectify the priority problem areas should be prescribed (2-3 flexibility & 2-3 stability/strength).
- A written copy of the program should be given to the Triathlete at the time.
- The program should be explained in layman's terms to ensure understanding and compliance.
- A copy of the report and prevention program should then be emailed to the Triathlete to consolidate information, the Triathlete's coach, who should also be contacted verbally, and if in the AIS and / or National squad a copy should be sent to the National Physiotherapist (Mark Alexander: markalex@hotmail.com).
- If there are any questions about the screening protocol please contact Mark Alexander on the above email address.

The objectives of performing a musculoskeletal screening are to:

- highlight any predisposing factors to injury, such as asymmetry in flexibility, strength / stability, proprioception and biomechanics
- reveal risk factors to injury from where interventions can be implemented that rectify any musculoskeletal problem areas and hence prevent and reduce the incidence of injury
- pre-screen athletes before major events to ensure they are fit and injury-free for competition
- assess any current injuries or assess any deficit resulting from previous injuries
- assess any musculoskeletal factors that may impact on performance
- give individual injury prevention programs based on screening results (Brukner & Khan, 2001)

The aims of developing a National Triathlon Screening Tool are to:

- optimise injury prevention and reduce the number of Triathlon injuries and hence optimise Triathlon performance
- standardise the assessment performed on Australian Triathletes at all levels
- expose Triathletes at all levels (especially Junior / SIS / SAS) to the elite-level screening and individually-prescribed injury prevention programs
- ensure ease of communication and standardisation between Physiotherapists who perform the screening tests, especially if Triathletes move interstate and / or gains selection to AIS / National Squads
- collect baseline musculoskeletal and injury data that can be utilised for developing injury prevention programs and devising research projects in the long-term
- have standardised screening tool accessible via the TA Website to increase the access for Triathletes of all levels and hence maximise injury prevention nationally
- ensure all SIS / SAS service providers / Physiotherapists have a clear understanding of the screening protocol and the processes involved and further educate if necessary



TRIATHLON MUSCULOSKELETAL SCREENING - Methodology

STANDING

POSTURE

Observe Triathletes standing posture and note any relevant issues

ANKLE DORSIFLEXION

Bend knee to wall, keep heel in contact with floor and maintain knee over middle toe then measure distance in cm from toe to wall

LUMBAR MOVEMENT

Observe quality and quantity of lumbar movement and note any relevant issues

CONTROL

Single Leg Balance

Measure time standing on one leg until first touch down of other foot or stance foot moves

Single Leg Squat

Observe single leg squat and note quality of movement

Hip Flexion

Observe standing hip flexion to 90degree flexion and note quality of movement

Also perform SIJ Gillets / Stork test

Hop

Observe hop and note quality of movement

SITTING

SHOULDER

Perform passive shoulder abduction with elbows flexed whilst shoulder is in internal rotation. Note the ROM from the vertical

SHOULDER IMPINGEMENT TEST

Perform passive shoulder internal rotation at 90 degrees shoulder abduction and whilst moving the shoulder into horizontal flexion still with humerus horizontal continue to perform passive shoulder internal rotation to elicit any pain.

THORACIC ROTATION

Perform thoracic rotation with arms folded across chest. Note ROM

SLUMP TEST

Perform slump test and note knee extension ROM from the horizontal

RESISTED HIP FLEXION

Ask Triathlete to lift knee to ceiling and then push downwards and note strength and quality of lumbo-pelvic stability

MODIFIED THOMAS TEST

Perform Thomas test and note ROM of hip extension to horizontal, hip adduction and abduction range from the midline and knee flexion with thigh horizontal



SUPINE

SLR

Perform straight leg raise and note hip flexion ROM from the horizontal

AKE

Perform active knee extension test by maintaining the thigh vertical and then measuring ROM of knee extension from the horizontal (eg knee fully extended = 90degrees)

GLUTEAL FLEXIBILITY

With hip adducted at 90degrees hip flexion, note external hip rotation ROM

HIP INTERNAL ROTATION

Measure hip internal rotation ROM at 90 degrees hip flexion

ANKLE PLANTARFLEXION

Measure ankle plantarflexion ROM

ANKLE / FOOT MOBILITY

Note sub-talar, mid-tarsal and 1st MTP mobility with manual assessment

PELVIC ASSESSMENT

Note quality of movement of pelvic squish test and note any pelvic asymmetry and imbalance

ABDOMINAL ASSESSMENT

Double Leg Lower

In supine with hips flexed and legs straight, lower legs to bed and note at what ROM from the horizontal the lumbar spine lordoses

Single Leg Bridge

In supine, bridge by lifting buttocks off bed to produce a straight line between shoulders and knees. Then lift alternate feet off ground 5 cm and note symmetry of quality of movement at pelvis / trunk

PALPATE

Palpate the TFL's and note tone. Palpate patella tendon, patella, medial tibial border, navicular, plantar fascia and Achilles tendon for presence of pain

SIDE-LYING

GLUTEUS MEDIUS STRENGTH

Perform modified Ober's Test in side-ly and flex Triathlete's bottom leg and have upper leg straight and in line with trunk and in knee extension and slight hip external rotation. Passively abduct hip vertically to end of inner range and then ask patient to hold their leg stationary. Then apply resistance vertically into adduction and note ability to hold, relative strength to other side and TFL compensation with hip flexing

PRONE

COMBINED ELEVATION TEST

In prone with chin resting on end of bed and arms outstretched in front of body and with thumbs interlocked and elbows straight, raise arms to ceiling and note ROM as compared to horizontal

SCAPULAR STABILITY TEST

In the swim catch position, resist pull-through (shoulder flexion and internal rotation) and note quality of scapular stability

GLENOHUMERAL ROTATION

Measure active shoulder internal in 90 degrees of abduction whilst stabilising the scapular and humerus horizontally

GLUTEAL FIRING PATTERN

Ask Triathlete to extend hip with knee straight and note the quality of movement at the lumbar spine and also note if gluteus maximus or hamstrings initiated movement first

PELVIC ASSESSMENT

Note any pelvic asymmetry and imbalance

FOOT STRUCTURE

Note 1st ray, rear and forefoot structure and note any positional issues that may require a Podiatry Review

