

INJURY PREVENTION & PERFORMANCE OPTIMISATION SCHOOL / YOUTH ROWING

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BODYSYSTEM® PHYSIOTHERAPY EXERCISE PHYSIOLOGY REHAB

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Consensus statement

2021 consensus statement for preventing and managing low back pain in elite and subelite adult rowers

Fiona Wilson¹, Jane S Thornton^{2,3}, Kellie Wilkie⁴, Jan Hartvigsen⁵, Anders Vinthagen⁶, Kathryn E Ackerman⁷, J P Caneiro⁸, Larissa Trease⁹, Frank Nugent¹⁰, Connor Gissane¹¹, Sarah-Jane McDermott¹², Alison McGregor¹³, Craig Newlands¹⁴, Clare L Arden^{14,15}



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OPTIMAL POSTURE



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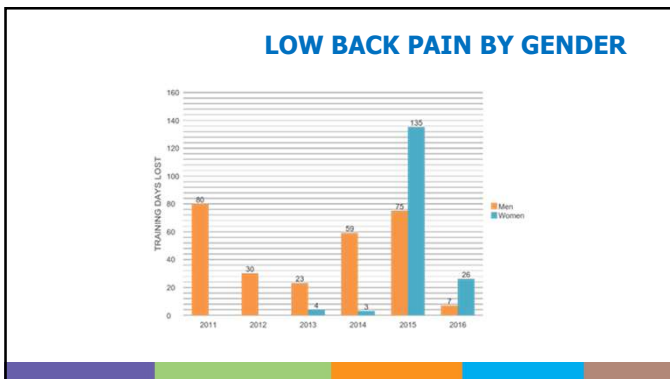
3

OPTIMAL POSTURE: CATCH Ankle + knee + hip motion



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STRETCH GLUTS AFTER EVERY SESSION 1-2min HOLD L+R

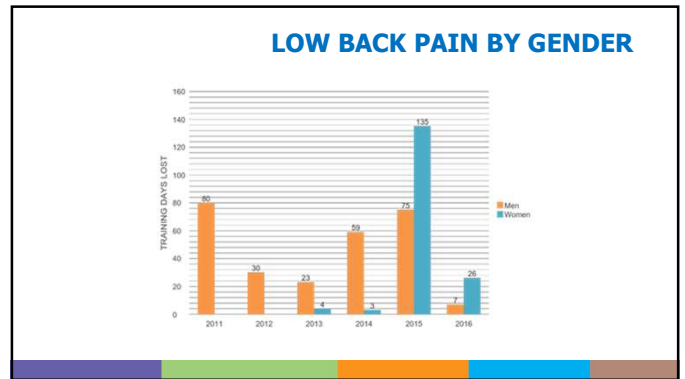


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STRETCH HIP FLEXORS AFTER EVERY SESSION 1-2min L+R

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Importance of investing in adolescence from a developmental science perspective

Ronald E. Dahl, Nicholas B. Allen, Linda Wilbrecht & Ahna Baltesoff Suleiman
Nature 554, 441–450 (22 February 2018)

Start rowing when start growing!

- Reduction in flexibility
- Reduction in strength

Male rowers – prioritise flexibility
Female rowers – prioritise strength

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MID-DRIVE & ROCKOVER

Hamstring length

The Drive Phase

The Recovery Phase

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HAMSTRING FLEXIBILITY

Stretch 1-2min L+R Daily

Image credit: F Wilson 2016, Artist V Earle

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SWEEP

Not much rotation!

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END OF STROKE

Abdominal strength + pelvic motion




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TRUNK / ABDOMINAL STRENGTH & ENDURANCE

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POSTERIOR (BACK) TRUNK STRENGTH & ENDURANCE



Female races = distance as male
Races take longer
Endurance demands are higher

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WHAT IS MOST IMPORTANT?

Hip flexion
Hamstring length
Abdominal strength
Lat strength

Ankle motion
Glut+Quad strength
Lat / back strength



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TRAINING LOAD

YOUNG GROWING BODIES
Sports-Specialized Intensive Training and the Risk of Injury in Young Athletes
A Clinical Case-Control Study
The American Journal of Sports Medicine, Vol. 43, No. 4
DOI: 10.1177/0363546514567298
© 2015 The Author(s)

Increased injury risk if;
Training hours / week
GREATER THAN
Age in Years

AUSTRALASIAN COLLEGE OF SPORT AND EXERCISE PHYSICIANS
AUSTRALASIAN COLLEGE OF SPORT AND EXERCISE PHYSICIANS POSITION STATEMENT
Sport Specialization in Young Athletes

Artistic gymnastics is the only sport that results in superior performance at an elite level when athletes start at a young age!

Evidence that multiple sports at younger age = increased likelihood of success in sub-elite & elite sport.

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TRAINING LOAD

AIS

Prescription of training load in relation to loading and unloading phases of training
Casefile Summary, Version 5.1, 9 May 2015

PREVENTING INJURY
Planned & completed training must avoid;

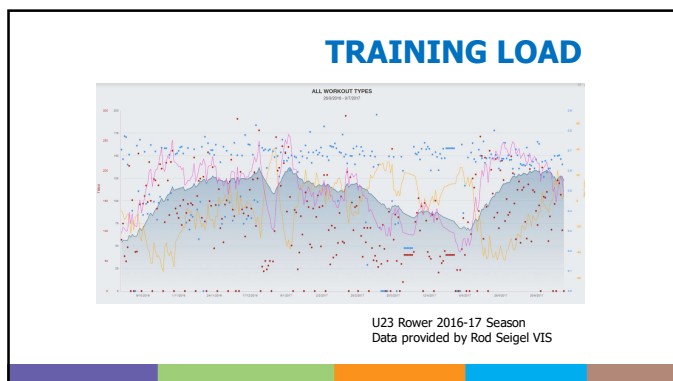
- A sudden increase in load
- A 'dip' in load followed by increase in load

Understand that;

- An injury or illness results in an unload predisposing to secondary injury or illness
- High chronic (3 month) load is protective for injury and illness

TRAINING LOAD
=
Intensity x Volume
RPE / HR x Time

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Prescription of training load in relation to loading and unloading phases of training

Executive Summary, Version 1.4, May 2015

TRAINING LOAD

Table 1 – Determining modified training period on return from reduced training load.

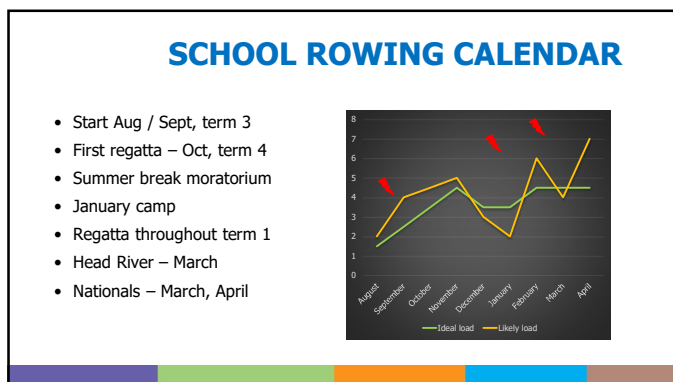
Weeks of training at a reduced load	Weeks of modified training required to return to full training (total weeks of modified training)				
	0%	20%	40%	60%	80%
8	8 (16)	6.9 (14.9)	5.8 (13.8)	4.8 (12.8)	3.7 (11.7)
7	7.4 (14.4)	6.3 (13.4)	5.3 (12.3)	4.2 (11.2)	3.1 (10.1)
6	6.9 (12.9)	5.8 (11.8)	4.7 (10.7)	3.7 (9.7)	2.6 (8.6)
5	6.3 (11.3)	5.2 (10.2)	4.2 (9.2)	3.1 (8.1)	2.0 (7.0)
4	5.7 (9.7)	4.7 (8.7)	3.6 (7.6)	2.5 (6.5)	1.5 (5.5)
3	5.2 (8.2)	4.1 (7.1)	3.1 (6.1)	2.0 (5.0)	0.9 (3.9)
2	4.6 (6.6)	3.6 (5.6)	2.5 (4.5)	1.4 (3.4)	0.4 (2.4)

Percentage of training of normal training load completed

CONSIDER

Illness
Injury
Exams
Moratorium /
Christmas

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ROWING-RELATED LOW BACK PAIN

THINGS TO CONSIDER IF YOU NEED TO STOP OR CHANGE YOUR SCHEDULED TRAINING

Reference: Wilson, S. et al. 2017. Evidence statement for preventing and managing low back pain in elite and club-level rowers. In: Sports Med. 2017.

LET YOUR COACH KNOW

Early unloading from regattas, regattas & other activities.

Increased stress
Decreased recovery
Increased leg loading
Reduced row length
Poor technique

High volume & intensity of training & competition
Fatigue & poor technique
Back loads over time
Decreased
Poor sleep hygiene
Poor sleep hygiene

High volume & >30 min of continuous ergometer rowing

SEE A DOCTOR OR PHYSIO

Appointed to training injury for early assessment, better communication with coach.

Steady increase in training load

Up-right posture & 70° leg motion

Previous history of low back pain
Rough water training or weather change

BE INVOLVED IN YOUR PLAN

Participate in decision making with your medical team and coaches.

Increased trunk strength & endurance

Careful consideration for change in boat setup & crew

Young training age

ACUTE PHASE

Keep entire crew out of rowing, avoid rowing training. Use pain relief when needed. See your doctor for further advice.

SUB-ACUTE PHASE

Reduce volume and intensity of training. Focus on technique and recovery. Consider a short-term reduction in training volume.

RETURN TO PERFORMANCE

Monitor symptoms and return to training with an interdisciplinary approach. Consider a short-term reduction in training volume.

CREATING A CULTURE OF EARLY RECOGNITION & MANAGEMENT OF LOW BACK PAIN IN TRAINING ENVIRONMENTS OPTIMIZES LEARNING & PERFORMANCE

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EARLY MANAGEMENT OF LOW BACK PAIN

If you have;

- 1) Sharp pain
- 2) Pain getting worse
- 3) Pain lasting >30m after row erg
- 4) Have to modify training or technique

SEE PHYSIO WITH ROWING EXPERIENCE

Avoid complete rest

Row / erg = pain > avoid
If can sit without pain > bike
Sit = pain > walk, steps, hills, swim, elliptical

Aggressive unload = less time out of training
Continuing to row / erg with pain = muscle splinting & poor performance
Heat + simple pain relief +/- AIS

Manage coach & rowers expectations, involve coach from outset & allow them to contribute ideas about why injury occurred
Clear communication with coaches about what rower CAN do

Culture of speak up early = early unload = early management + good communication = early return to boat

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DO NOT PERSIST WITH PAIN!

Pain results in changes to how the trunk muscles & leg muscles are used when rowing & for daily life

Persistence of LBP results in changes in the brain & long term changes in pain sensitivity

Controlling pain is of paramount importance
Physio & Medical need to work together
X3 Physio with no significant change – Medical needed

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STRENGTH & CONDITIONING

Consensus statement

Position statement on youth resistance training:
the 2014 International Consensus

Uguel RS, et al. Br J Sports Med 2014;48:606-608, doi:10.1136/bjsports-2013-029352

- Participation in resistance training supported on proviso that **qualified professionals design & supervise training program**
- Appropriately designed programs can **reduce sports related injury**
- Focus should be on development of **technical skill and competency**
- May have long term positive health benefits

Strength & Conditioning

Prioritise core, flexibility & movement patterns first

Rowing is resistance training

Master sport first then add strength work as you progress through years of training

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STRENGTH & CONDITIONING

How Young is "Too Young" to Start Training?

Designed by eYLSportScience

Strength

Best done in 'off season'

Females x3 per week

Males x2-3 per week

Smaller gains when endurance training is high

During season

Focus on core, flexibility & movement patterns

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INJURY PREVENTION

ROWING SCREENING

GrowingBODIES

	Test															
	Sit & Reach		Ankle CP		Thoracic Hip Ext.		Hip Flexion		Active Knee Ext.		Active Shoulder		Thoracic Rotation		Pop/Pat Test	
	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R
BENCHMARKS	>15cm	>15cm	>10	>10	>25	>25	>100	>100	>100	>100	>100	>100	>100	>100	>100	>100
NAME																
DATE																
HEIGHT (cm)																

EXERCISE PHYSIOLOGY

If no injury, Assess Flexibility Muscle patterning Strength Load Management Physio do this too

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ENERGY AVAILABILITY

- Growing & sport = energy intense, it is difficult to eat enough for rowing & growing
- Link between energy insufficiency & injury + illness
- Need to eat energy dense foods such as pasta, bread, potatoes * sugar is not bad!
- Carbohydrate & protein snack post training – increases anabolic hormones and reduces protein breakdown
- Chobani yoghurt, peanut butter on sour dough, eggs on toast, smoothie, up & go

Female Performance & Health Initiative

Delivering educational opportunities and resources relating to key female athlete performance and health considerations

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SLEEP

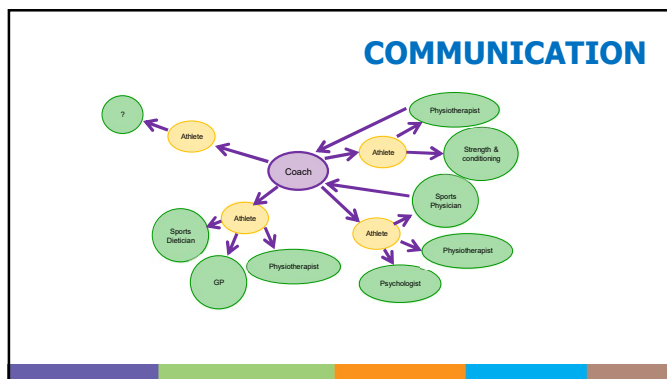
Likelihood of Injury Based on Hours of Sleep per Night

Designed by eYLSportScience

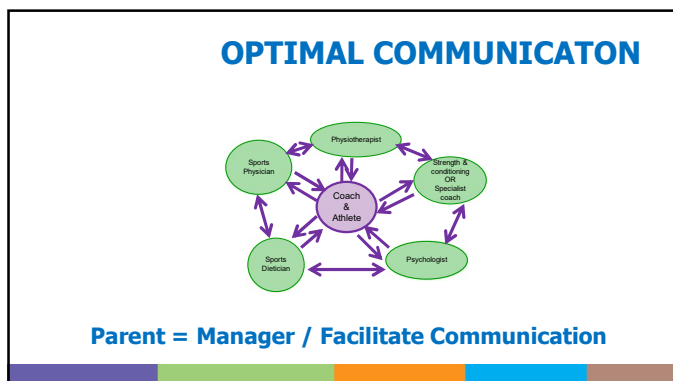
Athletes who sleep an average <6 hours per night have 1.7 times greater risk of being injured than those who sleep > 6 hours

Reference: Chronic Lack of Sleep is Associated With Increased Sports Injuries in Adolescent Athletes by Mihalik et al. J Pediatr Orthop 2014

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**PHYSIO
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EXERCISE
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REHAB**

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