



**HIGH PERFORMANCE
SPORT NEW ZEALAND**

Strength training for younger rowers

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(rowing)**

Outline: Strength (weight) training

- Benefits and risks
- Assessing or monitoring
- Methods
- Success indicators



Many differing perspectives!



Tradition



Role models



Individual opinions

Branding



Generalisations



PART 1: Benefits for (elite) rowers

- Improved rowing performance
- Non-performance or general adaptations
- Variety



1. Improved rowing performance



REF: <http://hdl.handle.net/10292/4599>

- **Effective total body-mass** recruitment to optimise peak stroke-power
- Absolute **leg-drive** to row the desired boat 2000-m speed
- Absolute **upper-body muscle-endurance** to perform elite rowing endurance-training volumes (cross-training)
- **MECHANISMS:**
 - Economy (MUR)
 - CSA of muscle tissue



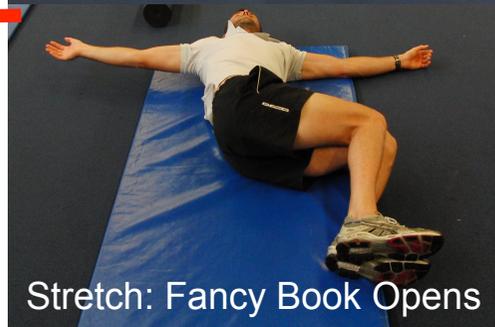
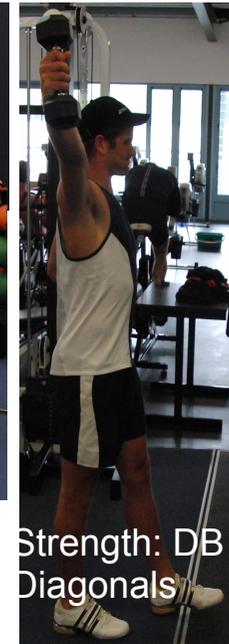
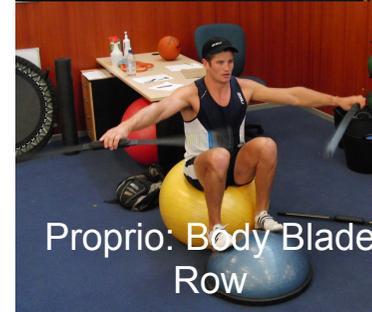
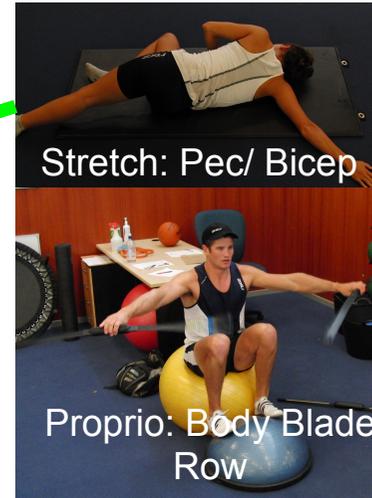
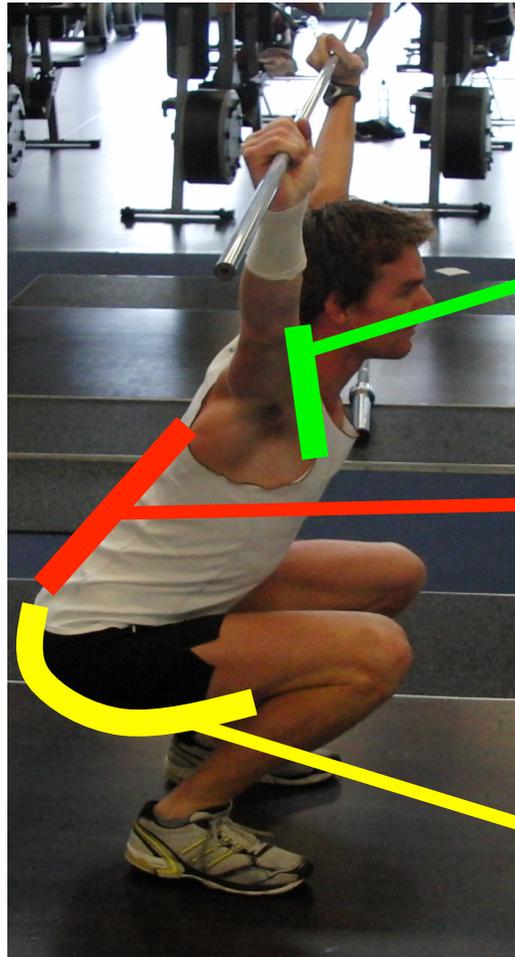
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2. General adaptations

- **Posture:** Pelvis (anterior tilt) and shoulder (winged scapulae)
“muscle strength and length”
- **Growth:** (reduce) spine flexion cycles and tissue-modelling
“Coordination”
“imbalances”
- **Screen:** rehabilitation (dysfunction), general soft-tissue resilience
“Niggles”



Snatch Squat & Special Conditioning



3. Variety



- **Individualise** training load and work distribution to each body-segment
- Individual **needs**, re-shuffle 'pecking-orders'
- **Social**, team building, mentally shift approach
- Fresh strategy



Risks



- Learn **technique!**
- **Effectively integrate** activity into an aerobic-dominant endurance schedule
- **Individualise loads or exercises** according to injury history or experience (Screen)
- **Muscle soreness!**
- Not all rowers like weights!
- **Investment:** Over the longer-term, need a large difference (12%) for smaller performance outcome (~3%)



PART 2: Assessing benefits

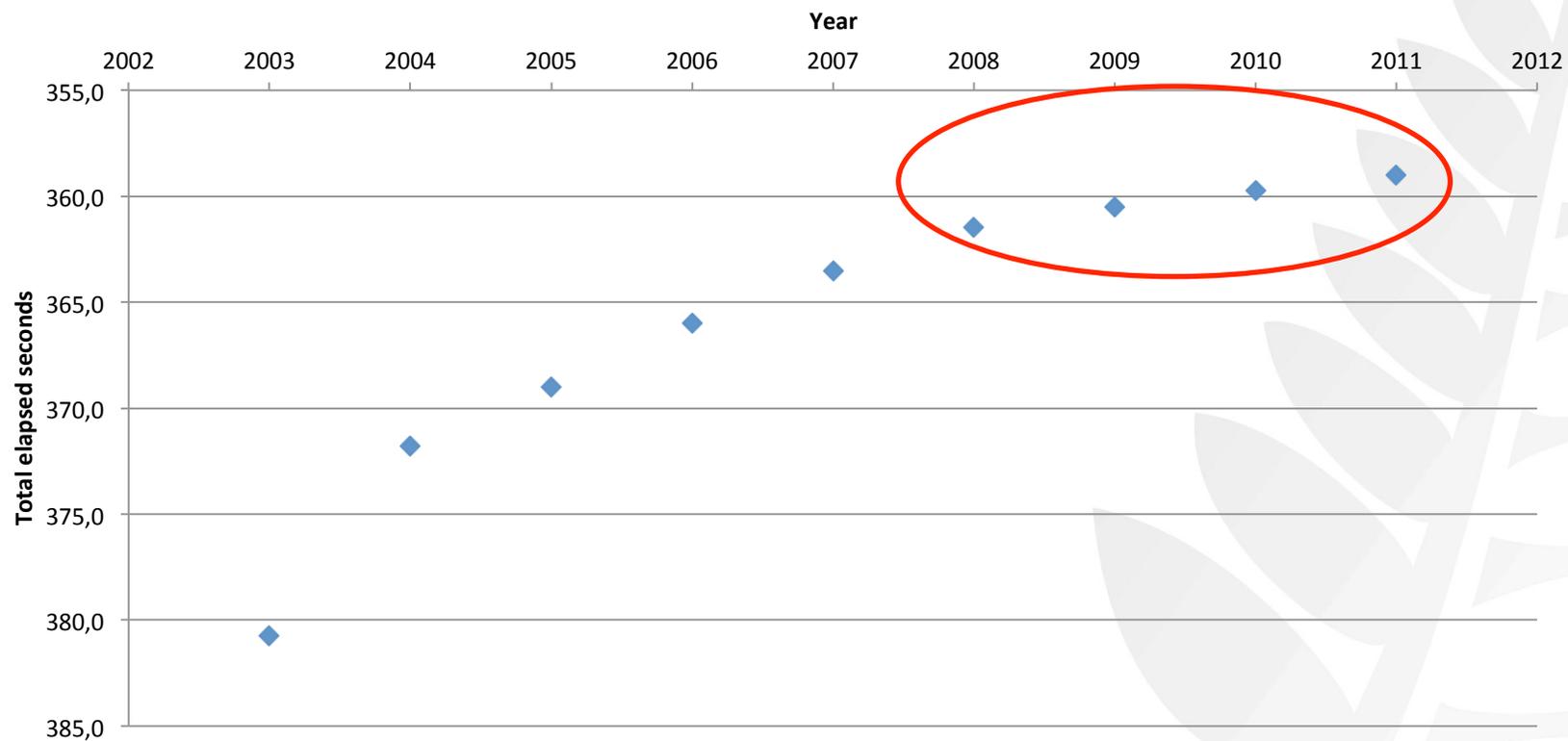


- Controlled design (contrasts)
 - Low-skill tests of strength
 - Match volumes of training
- Window of opportunity (8-12w)
 - Magnitude of change
 - Resources available (gym)
- On- or off-water tests?
- **Individual responses vary!**

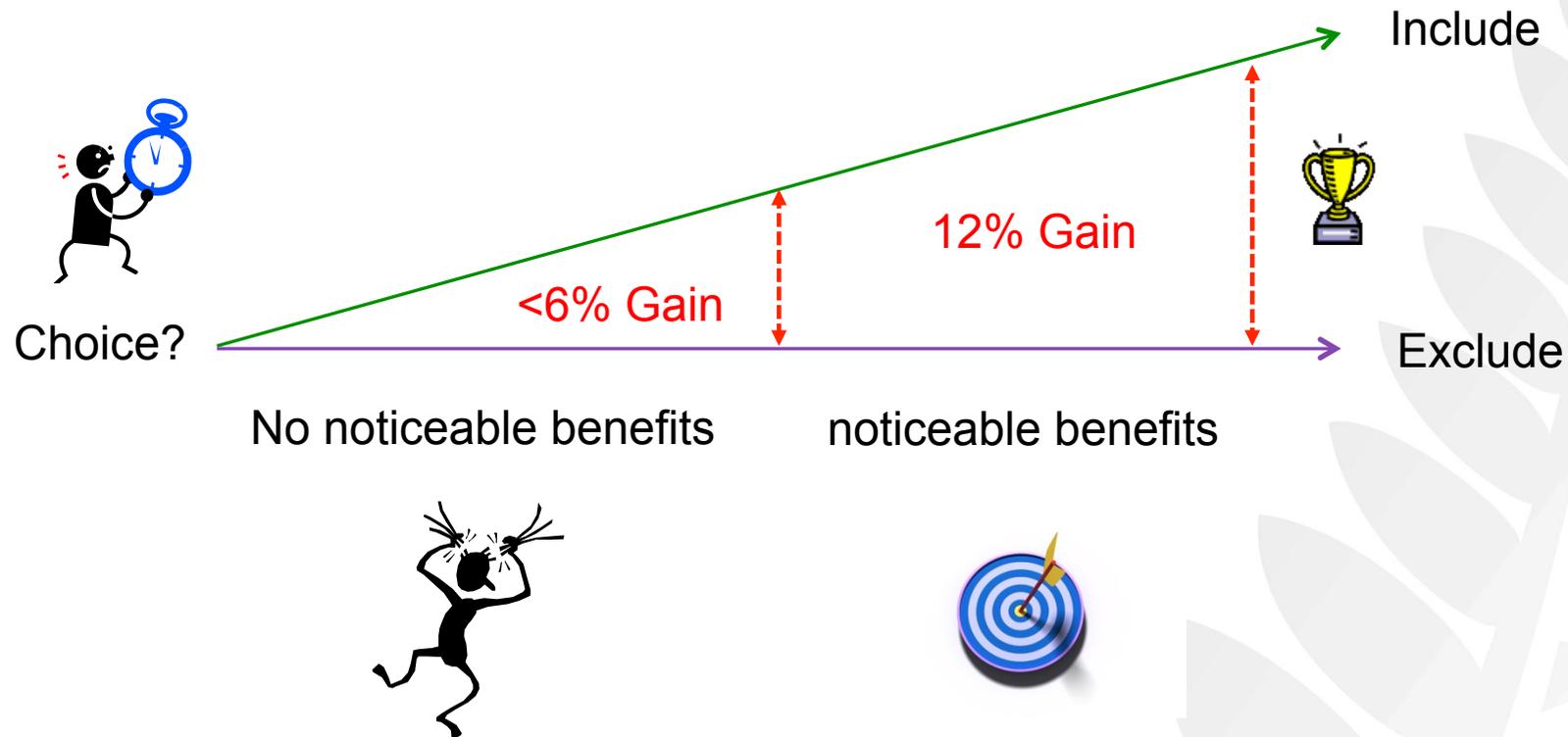


Performance changes (< 1 sec a year)

Average 2000-m ergometer times (males = 4)



Short versus longer term benefit



Challenge: Development stage (experience) dictates time required to attain change.

Monitor progress and test, occasionally



- **DYNO Leg press (5RM)**
- **DYNO Seated row (30RM)**
- Bench Pull (6RM)
- 1RM Power clean



Monitor training

			NAME: Nathan Cohen			CREW: M2x														
PHASE: Pre-Competition			START DATE: 17-Apr-12																	
CIRCUIT			DATE:	DATE:	DATE:	DATE:	DATE:	DATE:	DATE:	DATE:	DATE:									
TRAINING INTENSITY: ZONE 1			17-Apr			Thus			24-Apr			Thus			1-May			Thus		
LEVEL: Target			INT1			UNLOAD			INT2			UNLOAD			INT1			UNLOAD		
			reps	load	Actual	reps	load	Actual	reps	load	Actual	reps	load	Actual	reps	load	Actual	reps	load	Actual
1	Leg press (vary foot pos'n) <i>(every 3rd session: DYNO using 2 Brakes)</i>	260	Set 1	6	182.5		6	207.5	6	207.5		6	207.5		6	182.5		6	207.5	
			Set 2	6	207.5		6	207.5	6	235.0		6	207.5		6	207.5		6	207.5	
			Set 3	6	235.0		6	207.5	6	260.0		6	207.5		6	235.0		6	207.5	
			Set 4	6	260.0		-	-	6	260.0		-	-		6	260.0		-	-	
2	Hang Cleans <i>(or, Wide Squats - use 1.5 load)</i>	70	Set 1	6	50.0		6	55.0	6	55.0		6	55.0		6	50.0		6	55.0	
			Set 2	6	55.0		6	55.0	6	62.5		6	55.0		6	55.0		6	55.0	
			Set 3	6	62.5		6	55.0	6	70.0		6	55.0		6	62.5		6	55.0	
			Set 4	6	70.0		-	-	6	70.0		77	-		6	70.0		-	-	
3	Prone bench row	90	Set 1	6	62.5		6	72.5	6	72.5		6	72.5		6	62.5		6	72.5	
			Set 2	6	72.5		6	72.5	6	80.0		6	72.5		6	72.5		6	72.5	
			Set 3	6	80.0		6	72.5	6	90.0		6	72.5		6	80.0		6	72.5	
			Set 4	6	90.0		-	-	6	90.0		73	-		6	90.0		-	-	
4	Box Jump Ups (60cm plus), and 30 x seated cord rows		Set 1	-	-		-	-	-	-		-	-		-	-		-	-	
			Set 2	-	-		-	-	-	-		0	-		-	-		-	-	
			Set 3	-	-		-	-	-	-		-	-		-	-		-	-	
			Set 4	-	-		-	-	-	-		-	-		-	-		-	-	
5	Bench press <i>(omit on Thursday)</i>	85	Set 1	6	60.0		6	67.5	6	67.5		6	67.5		6	60.0		6	67.5	
			Set 2	6	67.5		6	67.5	6	77.5		6	67.5		6	67.5		6	67.5	
			Set 3	6	77.5		6	67.5	6	85.0		6	67.5		6	77.5		6	67.5	
			Set 4	6	85.0		-	-	6	85.0		76	-		6	85.0		-	-	
6	RDL (& Row) <i>(omit on Thursday)</i>	95	Set 1	6	67.5		6	75.0	6	75.0		6	75.0		6	67.5		6	75.0	
			Set 2	6	75.0		6	75.0	6	85.0		6	75.0		6	75.0		6	75.0	
			Set 3	6	85.0		6	75.0	6	95.0		6	75.0		6	85.0		6	75.0	
			Set 4	6	95.0		-	-	6	95.0		0	-		6	95.0		-	-	
			Set 1	-	-		-	-	-	-		-	-		-	-		-	-	
			Set 2	-	-		-	-	-	-		-	-		-	-		-	-	
			Set 3	-	-		-	-	-	-		-	-		-	-		-	-	
			Set 4	-	-		-	-	-	-		-	-		-	-		-	-	
			Set 1	-	-		-	-	-	-		-	-		-	-		-	-	
			Set 2	-	-		-	-	-	-		-	-		-	-		-	-	
			Set 3	-	-		-	-	-	-		-	-		-	-		-	-	
			Set 4	-	-		-	-	-	-		-	-		-	-		-	-	
			SESSION RPE (1-10):								7									
			NOTES/COMPETITIONS:																	4-6 May Winter series 1
			SPECIAL CONDITIONING																	
			SNATCH SQUAT (Pre/Post)	2 x 10																
			EXT. ROTATOR CUFF (Adduction)	2 x 15																
			STAND 1 LEG - 1 ARM PNF SHOULDER	2 x 15																
			Body-Blade	2 x 30 sec																
			Prone bridge with hand slides	2 x 30 sec																
			Leg curls	1 x 30																
			Cat/camel	1 x 10																
			Additional specific stretches, where required.																	



PART 3: Strength training methods

Rowing only (including resisted)

- Upper-body limitation
- Wear/tear or excessive load:
 - Lumbar-spine
 - Ribs
- Technique concerns?

Resistance methods

- Equipment:
 - weights, hydraulics, air-drag, elastic bands or gymnastics?
- Adjust intensity:
 - Resistance or speed
 - Changes in lean body mass?



Intensity: RM training zones

Reps:	1	3	6	9	12	15	20	
Traditional	3RM			10RM				
ROWING		6RM			15RM			

Experienced

Less-experienced

Method A

- Greater intensity
- Complex exercises (Cleans & squats)

Method B

- Greater volume
- Segment exercises (rows & presses)

Neurological



Morphological



TRAINING ZONE: 1 & 2

EMPHASIS: STRENGTH

Method B

Method A

Notes

Special conditioning musts:

- Snatch Squat
- PNF DB Diagonals OR Bodyblade
- Box squats OR Sumo Squats
- Cat/Camel/Allah
- Book opens
- Pornstar
- Prone Pec/Bicep Stretch

Select appropriate level from the load
selectors

'BASIC STRENGTH'

15x DYNO Leg Press (any # of brakes)
15x RDL & Row OR Prone Hip Extension

15x 1-Leg Press
15x 1-arm DB Row

15x Bench Press
15x Bicep Curls and Tricep Pushdown

Superset exercises (upper/lower)

HEAVY: 4 sets

LIGHT: 2 sets

'KARAPIRO CLASSIC'

6 x Pulls OR Powercleans

6 x Squats OR Leg Press

6 x RDL & Row

6 x Seated Cable Row OR Prone Bench Row

Each exercise individually - >2min rest b/w sets

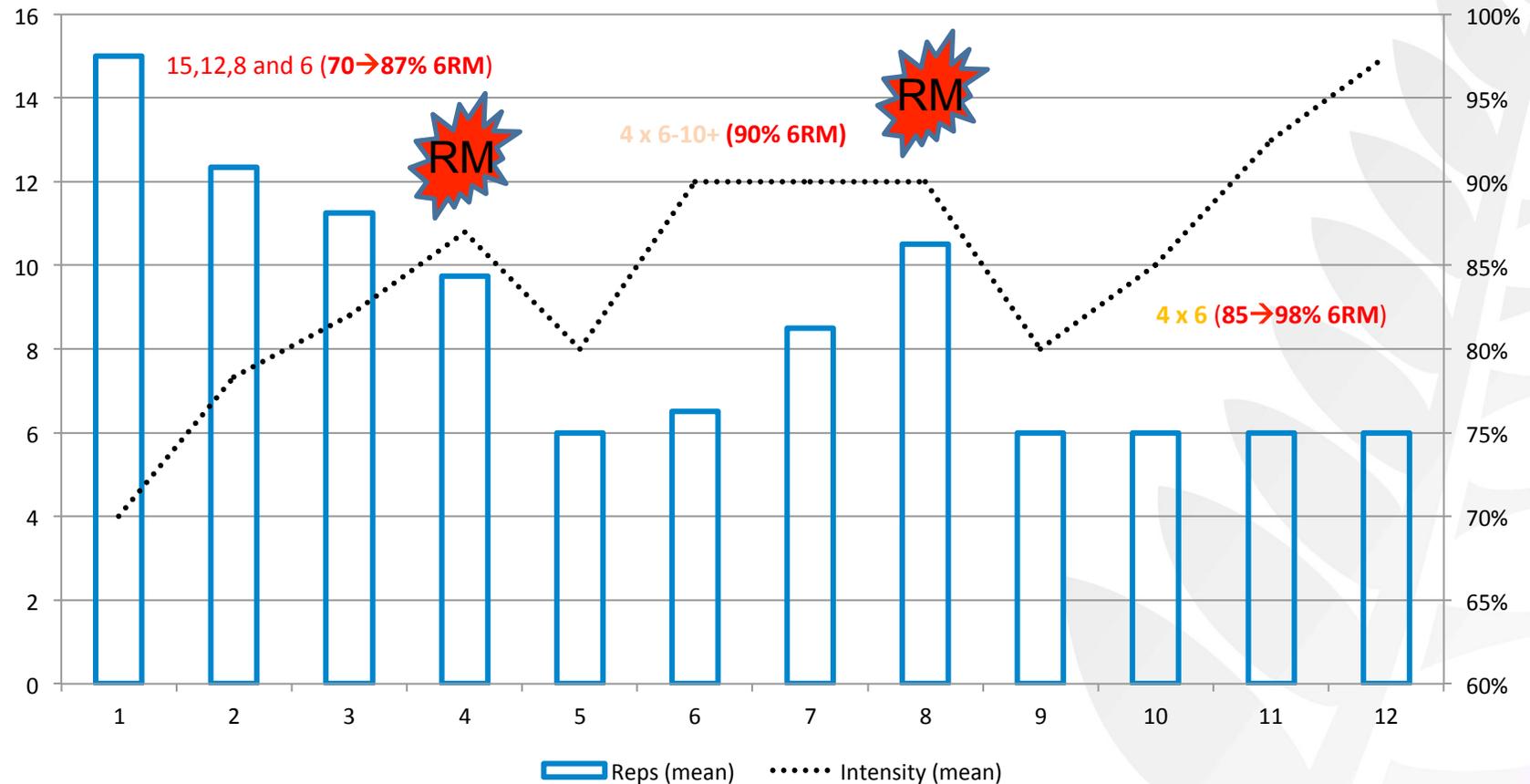
HEAVY: 5 sets

LIGHT: 3 sets

Periodisation: load variations (2 x week)



Test to assign loads (6RM)



Benchmarks

Heavyweight men	ZONE 1			
Repetition guide:	~6 reps			
Pick list	Medal	A-Final	B-Final	C-Final
DYNO Leg Press [2 Brakes]	1190	1100	940	770
Leg press	270	250	210	180
Power cleans	95	90	75	65
Prone bench row	95	90	75	65
Pulls	160	150	130	105
Squats	140	130	110	90



Coach, as load is dictated by form



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Part 4: Success indicators

- **Commitment**
 - Assigning time (united purpose), and
 - effectively integrating (energy to pursue)
- **Focus**
 - Individuals 'own' goals, and
 - Clear connection between personal target(s) and performance
- **Action-belief**
 - Pursue benefits or goals with passion, and
 - Unnerved by opinion



Summary



IF NOTHING ELSE:

- Over 8-12 weeks, lower-body strength clearly greater on inclusion of weight training
- Minimum worthwhile change (+10%), and
- Weights and ergs same problem: they aren't rowing!





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Practical

Low or high reps?

- Both, define goal.

What differs for U23 programmes when compared to the elite?

- Use more body-part and unilateral exercise (e.g. single leg press)
- Coach technique for more complex lifts (like cleans or deadlifts),
- Address musculo-skeletal (common) needs.

What differs for Juniors compared to U23?

- “Pass” overhead squat test
- Develop balance and mobility,
- All about technique! Keep exercises simple, abbreviate and avoid change
- Shorter campaign preparation (12weeks), more in-common activities



PRACTICAL: Preparation

10x Overhead Squat

10x 3-point kneel thoracic rotations

5x Cat/camel/prayer stretch

30s Wide-kneel sit back hip stretch

30x Air Squat in Sumo Stance

10x “Hindu” Push Ups

10x Prone alternate arm/leg raises

2mins Skipping



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PRACTICAL: Body Weight Circuit

10x “Pistol Squats” (chair) – alternatives:

- lateral step up onto chair, or
- 1-leg lunge squat off chair

10x Laying supine pull ups – alternatives:

- 1-arm supine pull-ups (with rotation)
or,
- chin ups.

10x Push Ups (PU) – alternatives:

- Incline (chair) PU;
- 1-arm (staggered) PU or,
- 3-point PU (1-leg flexed)

10x Hip Thrust (HT) – alternatives:

- 1-leg hip thrust, or
- 2-leg heels on chair, or
- “Donkey Kicks”

HINTS:

- Rotate through (top to bottom)
 - Repeat (build from 3 up to 5 repeats, adding a ‘set’ each week)
 - Adjust activity for ‘weaker’ and ‘stronger’ rowers (same volume)
- **After 4 weeks:**
 - Drop to 3 sets
 - Add 2 exercises (for upper-body)
 - Make activities ‘harder’, if appropriate.
 - Build sets from 3 up to 5 again
- **After 8 weeks:**
 - Increase repetitions to 15 and/or,
 - Create 2 circuits (each with 4 exercises)
or,
 - **Partner activities** e.g. Back to back Squats



PRACTICAL: Mid-section (core) circuit

30x Straight-Leg Curl Up – alternative:

- Double Leg-Lowers

30x Prone Trunk Extension – alternative:

- Prone (2-Leg) Hip Extension

30x 'Starfish' – alternative:

- Side hold 60-90s

- REPEAT 3-5x



PRACTICAL: Mobility

30s V-sit lateral torso bend – alternative:

- Chair version, or
- Partner assisted.

30s Supine Gluteal stretch – alternative:

- 90 degree knee, or
- Partner assisted.

30x Kneel torso rotation – alternative:

- Laying torso rotation, or
 - Partner assisted.
-
- REPEAT 3-5x





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