

Case Study: Lydia Lassila (Olympic aerial skier), her journey back from disabling low back pelvic pain

Below is a detailed account of Lydia's rehabilitation using Bounce back exercises and high tech equipment used by Ashley Merkur, (Physio Aust. Winter Olympic team 2014) APA Titled Sports Physio

Lydia Lassila, a 31 year old elite aerial skier, presented to us in March 2013 with multiple musculoskeletal issues. She reported that most of her problematic injury was her lower back pain. Lydia had suffered from low back pain, dating back to 2002 with an L4/5 facet injury.

The most aggravating factors were sitting, lifting her 2 year old son, turning in bed and ascending stairs. Pain was located more on the right side of her lower back, pelvis, into her buttocks and both hips. She also had rib pain on the right, thoracic spine stiffness.

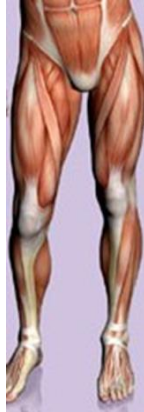


Ashley: "Trish's expert assessment identified a combination of anterior hip instability, sacroiliac joint incompetence, and absence of deep spine, pelvic and hip stabilising muscle activation amongst other aberrant recruitment patterns. "

Differential Diagnosis of Lydia's issues

It is our impression that Lydia is experiencing a number of issues in her musculoskeletal system of the following order of priority:

1. Left worse than right anterior hip instability
2. Left SIJ incompetence
3. Stiff upper lumbar and right thoracic spine leading to increased right neural tension
4. Right patellar tendinopathy
5. Bilateral ankle issues



Lydia's rehabilitation program

Trish instituted a targeted rehabilitation programme which gave us very clear and specific exercises about the hip and lumbopelvic region with logical and timely progression.

Lydia fastidiously completed this programme in combination with strength work in the gym and made consistent progress over a two month period.

Her symptoms were largely resolved in all dry land training and subsequent follow up by Trish confirmed significant improvement across all identified issues in the lumbopelvic and hip region.

Further exercise progressions were made to allow Lydia to control her thoracolumbar spine with the assistance of EMG biofeedback.





After 2 month's intensive rehab Lydia was able to re-commence sport specific training in June on the water ramp in Switzerland, gradually increasing the load.



She has continued to perform the rehabilitation exercises devised by Trish as part of her daily warm up routine prior to jumping.

To date, the summer training season has been going well, with Lydia again being able to progress to some of her larger tricks on the triple kicker on water without being hampered by pain.

There is no doubt that management of Lydia's injury through application of Trish's knowledge and experience has contributed to successful rehabilitation.

Spending time with Trish myself at several of her courses has also allowed me to personally improve my assessment and treatment skills of the sacroiliac joint, lumbar spine and hip, refining Lydia's day to day management".



Lydia's comments: "I really struggled through the 2013 season with my back injury. It was a difficult injury to manage especially with the constant pounding and impact I experience as an aerial skier.

I was in a lot of discomfort and was extremely limited with my preparation before each event which also impacted my confidence. Trish has been a brilliant source of expertise in diagnosing and developing a specific treatment plan for my rehabilitation. I am now in a much better position physically and feel like I am more informed and equipped with skills to manage this area of my body now and in the future.

The next phase of this year will be a return to training on snow in November, with the ultimate goal of back-to-back Gold at the next Olympic Winter Games in Sochi, Russia, in February 2014".



The latest news on Lydia since September

Lydia returned to Australia for a short Christmas break at which time we were able to fine tune her program.

In 2014 Ashley and Trish have been in correspondence discussing Lydia rehab program and adjusting exercises as required but the day to day demands of the sport

At China World Cup Lydia experienced hamstring tendonosis pain now in the knee. Treated with isometric tendon program #profjillcook #monsters (monashtendonresearchprogram?)

Grade 1:



Grade 2:



Grade 3:



After the 2nd World Cup in China and then January 2014 Lydia achieved 1st place in the World Cup Canada, beating the Chinese second place getter by 17 points.



Sydney Morning Herald article:

<http://www.smh.com.au/sport/winter-olympics/inform-lydia-lassila-wins-world-cup-aerial-skiing-event-20140115-30v9x.html>

How Trish and Ashley Merker used high tech joint positioning and muscle recording to design the right program for Lydia Lassila.

A V move 3D movement analysis and spinal muscle EMG was performed with the help of Andrew and the team at Dorsa V. This detailed assessment, outlined in the pictures that follow, illustrate the detailed information the V move equipment provides when utilised with a spine specific assessment protocol which Trish designed. The assessment involved the following tests repeated to assess endurance and fatigue Early am and then late pm. This checked if endurance was a problem or more a motor control issue.

Lydia Lassila Movement Analysis 22 May 2013

Functional Assessment Data

- 1. Squat (to seated position)**
- 2. Single Leg Squat Left & Right Leg**
- 3. Arabesque (Left & Right Leg)**

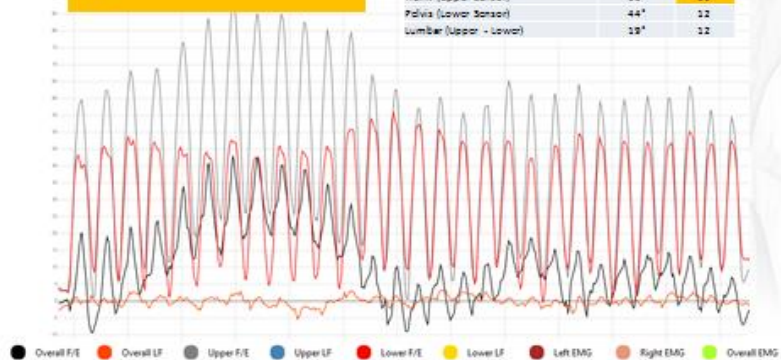


This recording from the V move of Lydia doing 2 legged squats indicated high variance (poor control) 2 standard deviations above the normal movement. Exercises with specific control and proprioceptive cues were designed to correct this.

AM Session: Squat movement for 60 seconds

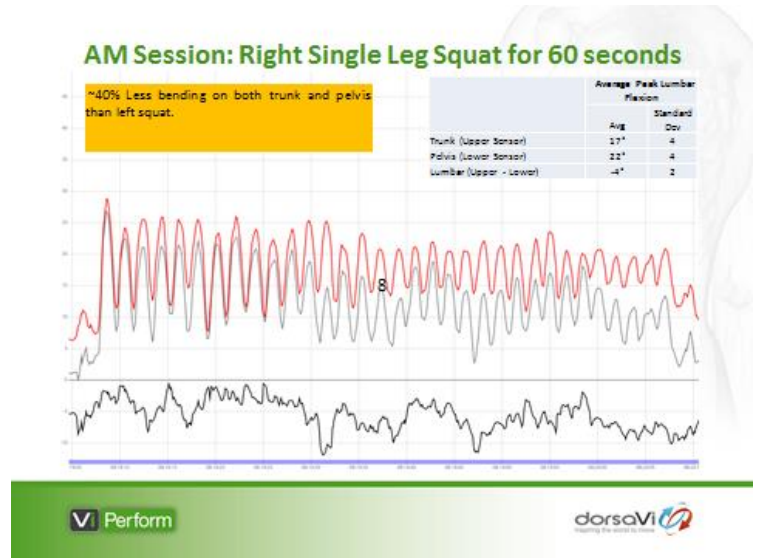
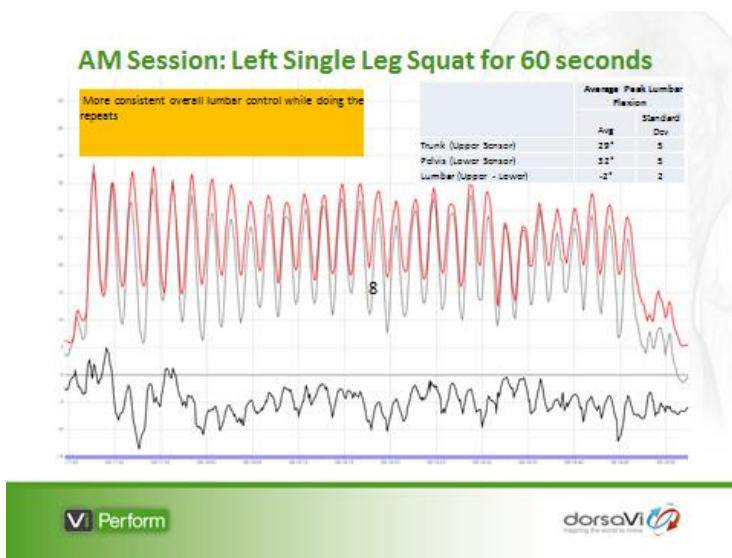
High variance in Trunk movement for each squat.
Lateral flexion (orange line) indicates good lateral control.

	Average Peak Lumber Flexion	
	Avg	Standard Dev
Trunk (Upper Sensor)	62°	20
Pelvis (Lower Sensor)	44°	12
Lumbar (Upper - Lower)	18°	12



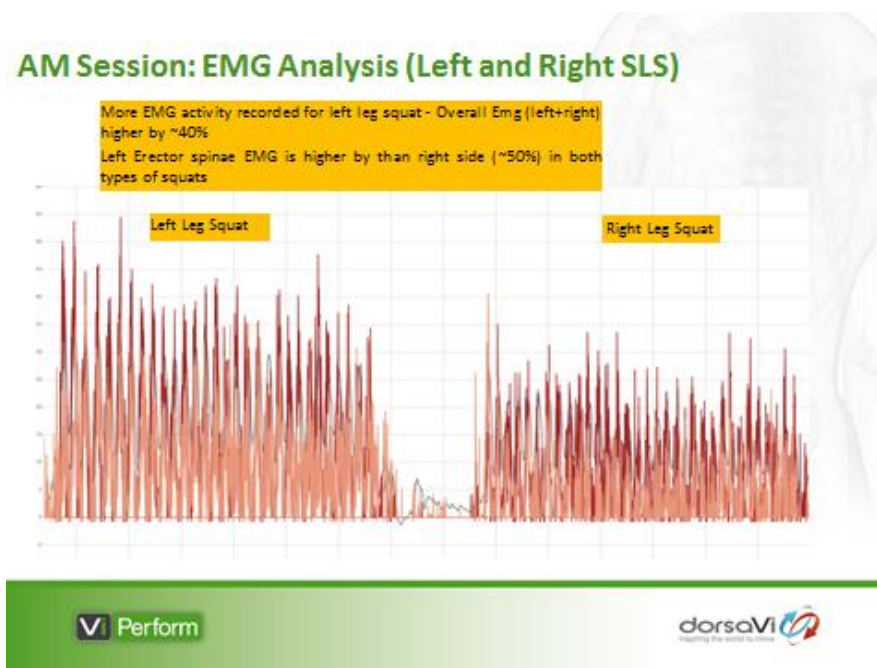
In Lydia's single leg squat significant differences were seen between her pain free left side and the painful right side where significant compensatory lumbar splinting was noted.

Exercises were graded and progressed to retrain eccentric control and dynamic optimal movement through the spine and pelvis.



Finally the v move assessment demonstrated that spinal muscle activity was 40% less on the painful right side (and with less control in being able to turn the muscles on and off) compared to the pain free left side.

Exercises were designed to stimulate muscle activity and retrain concentric/eccentric 3Dimensional control.



The final result. In conjunction with Ashley Merker's excellent hands on treatment and rehab/load management, combined with Lydia's dedication, her endurance and difficulty of jumps attempted is greater than ever.

We wish Lydia and the Winter Olympic team the very best for luck in Russia February 2014
#Sochi2014



Lydia will be jumping on 14 Feb 2014 – mark it in your diary.



www.bouncebackexercises.com.au

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