Overview

What is S&C?
What makes a great gymnast?
Flexibility and ROM
Handstands
Landing
Core
Enhancing Physical Capacity
What is S&C?

A specialised area of sports science focused on optimising physical preparation for sports performance

Involves developing strength, speed, power, endurance, flexibility, specific to the sport and athlete

Reducing injury risk

It is NOT Body building
Demands of Gymnastics

Aesthetic sport involving multi muscle, multi joint movements. Large ROM in most joints, strength required through full ROM. Time in the air is important and this is increased by improving strength and power of upper and lower body. Improvement in these areas allows time for more somersaults and/or twists and landing time.

Large upper body strength demand (4/6 apparatus)

PCr and LA energy systems predominate, recovery aerobic. (FX 70s, V~4s, Rest~30s)

Typically large training time required (+30hrs per week)
What Physical Characteristics Make a Great Gymnast?

Flexibility
Strength
Speed
Muscular Endurance
Skill

(Jemni 2011; Arkaev and Suchilin (2004)
Flexibility

Must have good ROM across most joints
How much flexibility do we need?
Need to know what you are stretching and why?

Are our stretches appropriate?
Hip ROM

If you know what is restricting the movement you can target it directly

Tight hip flexor?
Tight Glutes?
Ankles and Wrists

Do we need good ROM in ankle and wrist?

Need ankle stability but it is also important to have good ROM to prevent injury
Shoulders

Full ROM is essential because it will allow improved performance and more economical gymnastics.

It will allow correct shapes to be achieved reducing execution errors.

Reduce injury risk.
Shoulders
Assessing ROM

Hip Flexors
Gymnast to lie on edge of box/ horse
Pull knee to chest keeping lower back in contact with box/ horse
Relax opposite leg

Simple grading
Red = knee above horizontal
Amber = knee at horizontal
Green = knee below horizontal
Assessing ROM

Ankles
Measure distance from the wall that the gymnast can touch with their heel flat

Hips square to wall

Simple grading
Red = 0-5cm
Amber = 6-9cm
Green = 10+cm
Assessing ROM

Shoulders
Sit with gymnasts back against a wall
Lift arms as high as possible maintaining contact with the wall

Simple grading
Red = No contact with wall
Amber = Wrist to touch wall
Green = Wrist and elbows to touch wall
Practical

\Women's Gymnastics\Programmes\WAG Stretches & Release 2014.docx

\Men's Gymnastics\Programmes\Release & Mobility.docx
Handstands

Improve shoulder ROM and improve handstand in many gymnasts
You all know the progressions
Must reinforce correct position at all times
no matter the location (Floor, PBar, Rings)
Landing

Determined by motor control and the ability to cope with load (Marinsek 2011)

The amount of force required to be absorbed during take off AND landings can be in excess of 14X Body Weight

It is essential that correct landing position is taught and reinforced

Uchimura
Focus should not just be on the stoi.
Landing

Landing Drill Ideas
1. Show correct landing position
2. Land from box
3. Single leg landing from box (knee height)
4. Hop and stick
5. Somersault to land
The “Core”

What is the “core?”

[Diagram of muscle anatomy]
The “Core”

How do you train it?
Leg lifts, sit ups, dish/ arch etc
Are our exercises working what we want them to work?
Is posture a focus? It should be!
Physical Capacity

Do you really need to do anything fancy?
Do more gymnastics
Decrease rest time
Increase training density (how much work in a given time)
If routine lasts 30s does going for a 1hr jog make sense?
Summary:

Maintain ROM in all joints

All areas of performance need coached

Reinforce correct landing position

Question what you are doing
Any Questions?