

# 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

Tight  
Hamstring?



Tight hip  
flexor?

Tight  
Glutes?

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

# 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

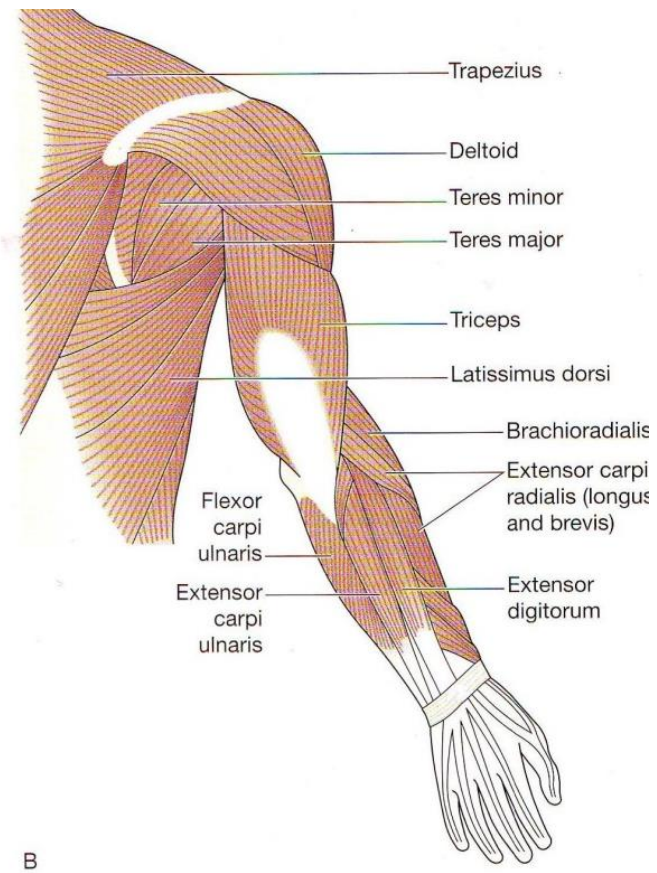
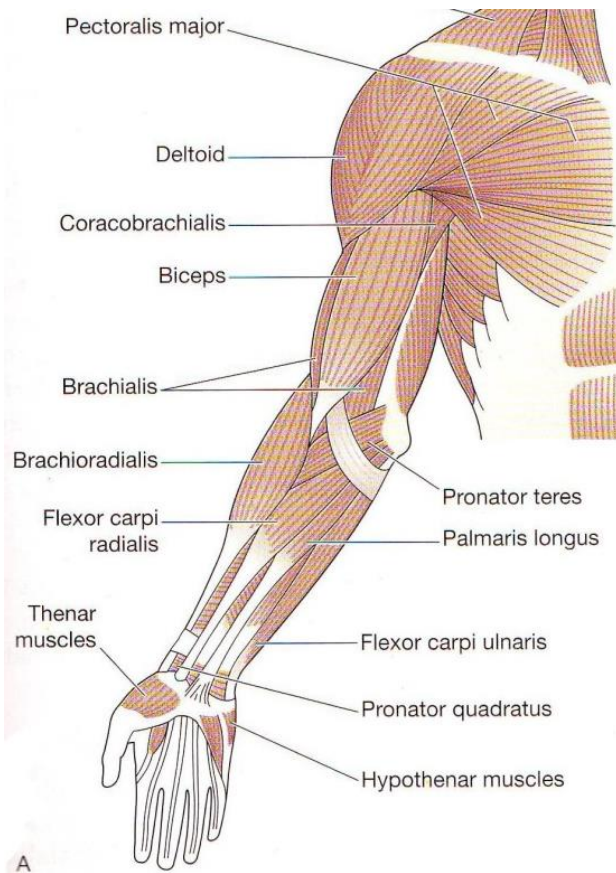
It will allow correct shapes to be achieved reducing execution errors

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](#)

# Landing

Focus should not just be on the sto





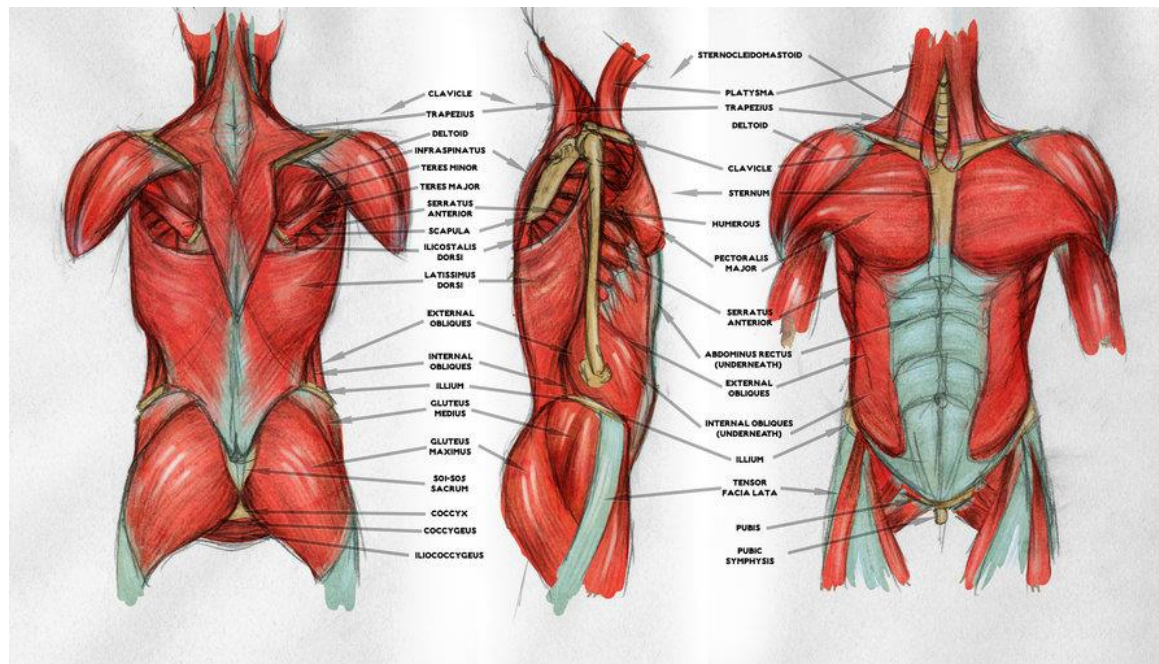
# Landing

## 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?”



# 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?



*Providing high performance expertise  
to sport and athletes in Scotland*