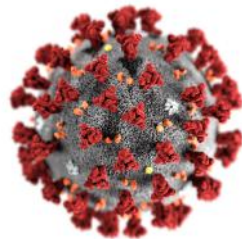




# Strength & Conditioning for Orienteering

2021 Virtual Coaching Conference

*Many thanks to Hilary, Peter & Denise*



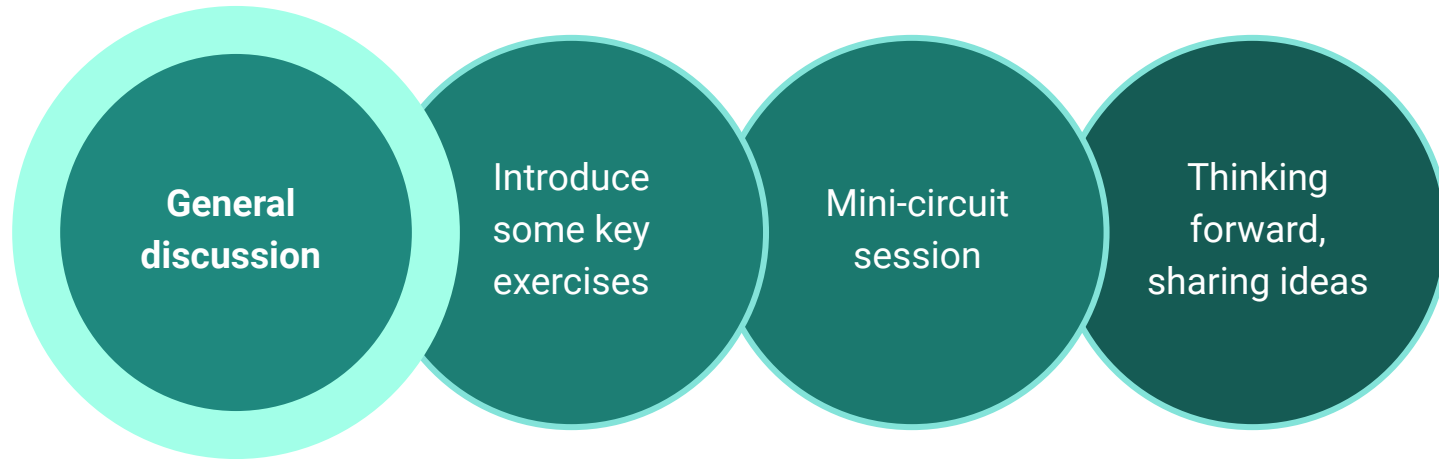
# Strength & Conditioning for (orienteering) fun

Session aim: equip coaches with ideas & confidence  
to deliver S&C sessions for their clubs/groups





## Plan for today



+ designing your S&C session

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# What is strength & conditioning?

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# What is strength & conditioning?



Ability to produce a force



Non-sport: the process of training or  
accustoming a person or animal to  
behave in a certain way



**Sport: the process of training our  
body to move in a certain way**





# What is Strength & Conditioning?

- *All the other stuff that isn't your cardiovascular training*
- Training which aim to improve **strength, speed, agility, balance, flexibility, and power**
- Focus on **improving movement quality**
- Can be done in many forms
  - Doesn't have to be going to the gym/involving heavy weights - or even any weights!



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**Why do we do S&C?**  
**What are the benefits?**



# What are the benefits of S&C?

- Improved running efficiency running economy
- Improved performance - run faster, run further
- Injury prevention

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**What particular aspects of S&C  
are important for us as orienteers?**





# S&C for orienteering - what's important?

Physical demands of orienteering = **running** across **rough & uneven** terrain

Running = one-legged sport

**LEG STRENGTH**

Terrain 'pushes you around'

**Core stability**

Balance & proprioception

**Ankle stability**





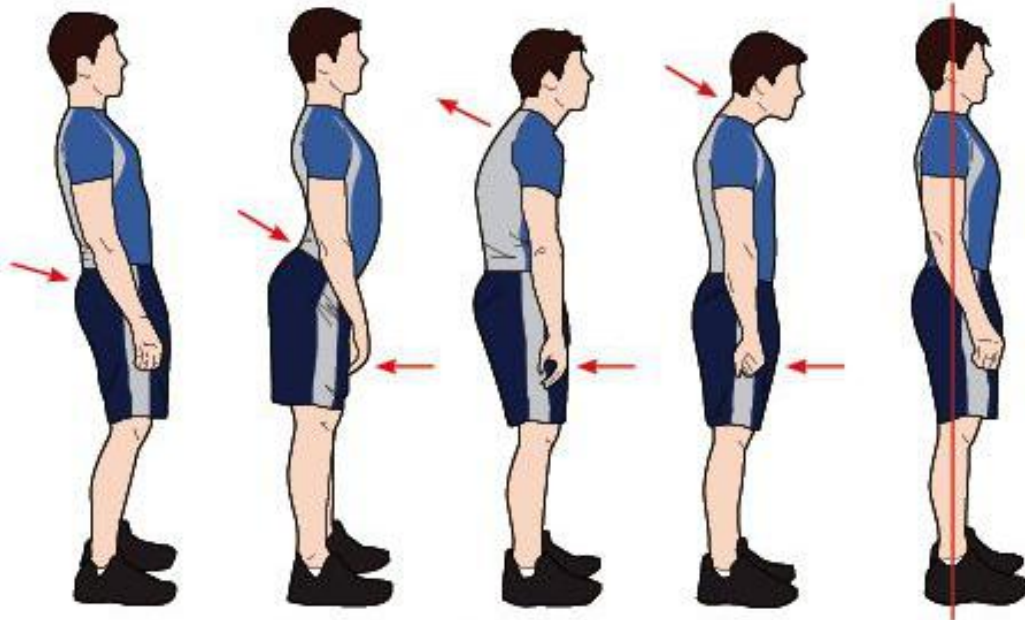
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# Some concepts

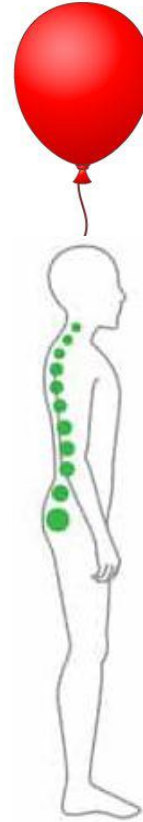
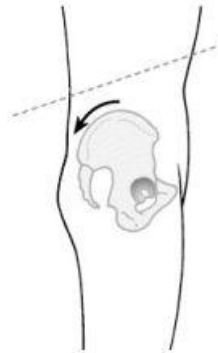
- Specificity
- Quality >>> quantity
  - Importance of good technique
- Neutral spine
- 'Core' stability



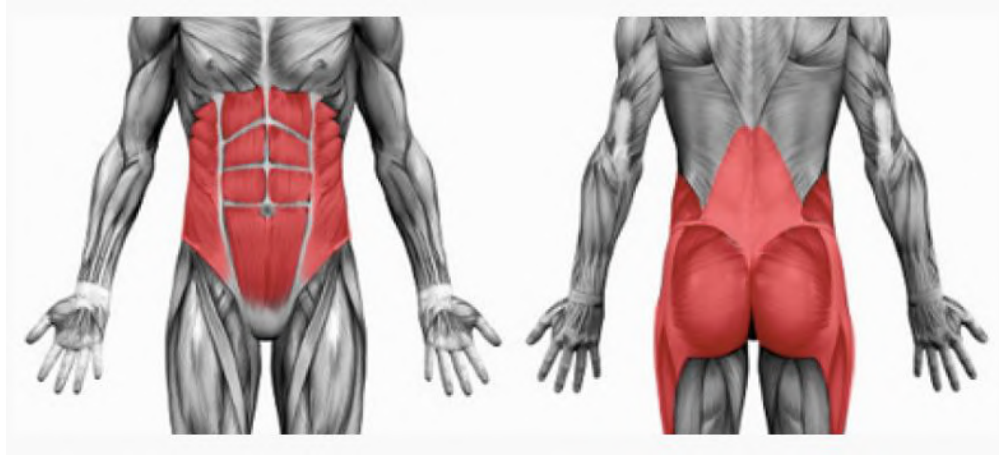
# 'Neutral' Spine



# 'Neutral' Spine



# 'Core' stability





Goal - an S&C session  
for your club that is:

- Beneficial
- Fun
- Safe

Let's get our coaching hats on...



## Your club or group

- Age
  - Fitness level
  - Experience
- } Range..



# Older adults

Original Research

*The* Journal of Strength and Conditioning Research™

## **Resistance Training for Older Adults: Position Statement From the National Strength and Conditioning Association**

*Fragala et al 2019, Journal of Strength and Conditioning Research*



Some is good,  
more is better

Make a start today:  
it's never too late

Every minute  
counts

## Be active

at least  
**150**

minutes  
moderate intensity  
per week

increased breathing  
able to talk



OR

or a combination of both

at least  
**75**

minutes  
vigorous intensity  
per week

breathing fast  
difficulty talking



to keep muscles, bones and joints strong

# Build strength

on at least  
**2** days a  
week



## Minimise sedentary time

Break up periods of inactivity



For older adults, to reduce the  
chance of frailty and falls

## Improve balance

2 days a week





# Young people

Consensus statement

## Position statement on youth resistance training: the 2014 International Consensus

*Lloyd et al 2013, British Journal of Sport Medicine*





## Mode of delivery





**Warm Up**

Main session

Cool down

### Raise



Body temperature, heart rate, respiration rate, blood flow, and joint viscosity.

### Activate & Mobilise



Activate key muscles, mobilise key joints.

### Potentiate



Reach the same intensity of subsequent exercise, utilise post activation potentiation if applicable.

Warm Up

Main session

Cool down



## EXERCISE SELECTION

Organisation? Intensity? Adaptability/progressions?

## VOLUME

Repetitions: time, number? Sets? Rest?

Additional fun/challenge

Free countdown timer (others available!)

<http://www.intervaltimer.com/create/circuit-training-timer>



Warm Up

Main session - idea 1 - big circuit

Cool down

Exercise 1 - legs

Exercise 2 - core

Exercise 3 - legs

Exercise 4 - arms

Exercise 5 - core

Exercise 6 - legs

Exercise 7 - balance

Exercise 8 - core

**Exercise:** 30 seconds

**Rest:** 15 seconds

**Circuit:** 3 times

**Or**

**Exercise:** 10 repetitions

**Sets:** 2

Warm Up

Main session - idea 2 - mini-circuits

Cool down



Exercise 1 - legs

Exercise 2 - legs

Exercise 3 - legs

Exercise 4 - core

Exercise 5 - core

Exercise 6 - core

Exercise 7 - arms/back

Exercise 8 - arms/back

Exercise 9 - arms/back

Exercise 10 - balance/jump

Exercise 11 - balance/jump

Exercise 12 - balance/jump

# CORE TRAINING

## Progression & Regression Framework

*Gibson, Williams, Maitland & McCunn (2017)*



### BASE OF SUPPORT

- Stability or BOSU Ball
- Creates **unstable base of support**
- ↑ Trunk musculature activity
- Alter difficulty level (**intensity**)



### LEVER LENGTH

Longer lever length  
likely increases  
**difficulty**

Add in some weight



### MOVEMENT COMPLEXITY

The further the **load** is applied from the **fulcrum**, the greater the **effort** needed to overcome **inertia**

Manipulate movement complexity by ↑ or ↓ number of moving **joints** & **planes** (directions) of movement



## Progression & Adaptability

### Adjusting total volume

- Increase or decrease the number of reps, time per exercise, or number of sets



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www.scienceforsport.com



## Building a program of sessions

- **Gradually increase volume**
  - Increase time, increase sets, add another exercise
- **Variety of exercises**
  - Good to repeat same session - gain familiarity, see progression
  - Variety keeps it fun & trains different muscles
  - Could alternate between session A & session B

Warm Up

Main session

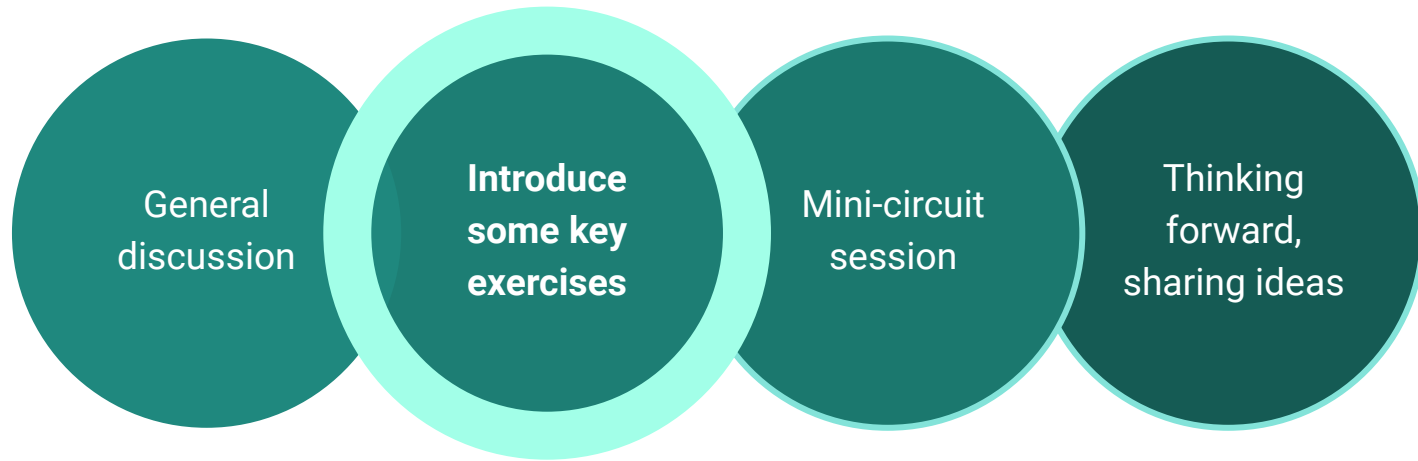
Cool down



Stretching

Good opportunity  
for chatting :)





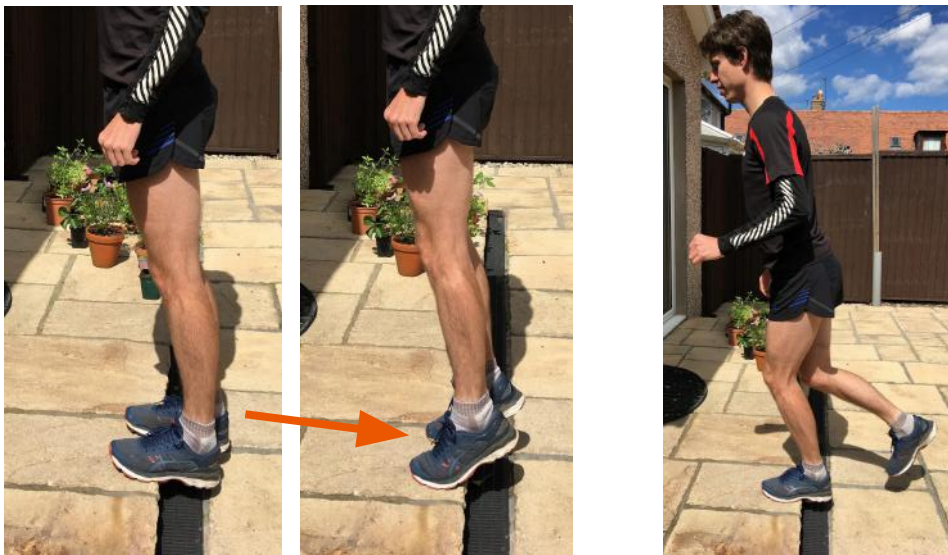
+ some key coaching points

Adaptations and progressions

- To make easier
- To make harder

# Calf raises

*Either on a step/stairs/textbook, or just on the floor*



## Key Points:

- **Slow & controlled** - both going up and especially lowering down
- Try to keep everything aligned - don't let the ankles or knees go in/out
- Keep **hips level** (if single leg)

## Adaptations/Progression:

- Use a wall for **balance** if needed
- Try the exercise with a **single leg** or with **eyes closed**
- Perform the exercise with a **bent knee** - this will further work the soleus (lower calf) muscle

# Glute Bridge



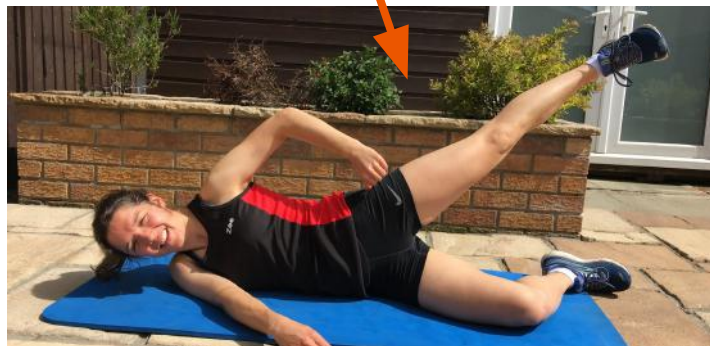
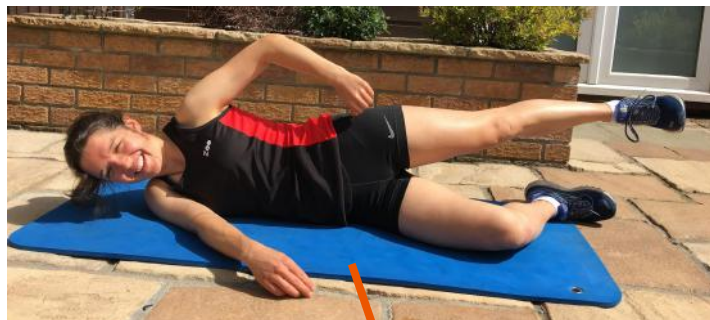
## Key Points:

- Really think about **squeezing the glutes** - try and push hips to the sky
- When raising and lowering movement = slow + controlled

## Progression/variation:

- **Single leg raise and lower**
- **'March' between legs**  
\*\*make sure to **keep hips level**\*\*
- **Increase distance between ankles and bum** - the further away, the more it will load the hamstrings

## Side glute raise



### Key Points:

- Make sure shoulders & hips are stacked on top of each other
- Work within own range of movement
- Keep the leg slightly back - don't let it come out in front (then using hip flexors not glute med)

### Progression/variation:

- **Hold the leg still** in the elevated position for 30 seconds
- Next, in the elevated position, keeping a straight leg **make small circles with the foot** for 30 seconds, changing direction halfway

# Lunge

*Classic exercise many variations!*



## Key Points:

- Aim for **90 degrees** at hip, knee & ankle - knees over ankles - adjust stride length to achieve this
- Don't let the knee fall inwards
- Concentrate on the push-back, try to stay balanced between lunges if you can, come up to a running 'A' position
- Add in arm movement

## Progression & variations:

- **Once in position, raise & lower**
- Try **reverse lunge** - stepping backwards instead of forwards
- If you have space - **walking lunge**, move forward each step
- **Add a twist** in the lunge position - challenge your balance
- Lunge with your **arms overhead** - again challenging balance
- Lunge onto an unstable base

# Single leg balance



## Key Points:

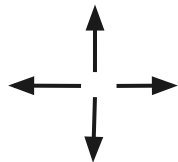
- Keep a slight knee bend in the standing leg, don't let the knee fall inwards or outwards
- Make sure to **keep hips level**
- Choose your challenge level from below

## Progression/adaptations:

- Use wall for balance
- Add **running arms** swings
- **Close your eyes**
- Stand on a wobble cushion or an uneven surface



# Hopping



## Key Points:

- Make sure to 'stick' the landing - start with small distances
- Make sure knee doesn't fall in/out

## Progression/Adaptation:

- Step from leg to leg + balance
- Hop further!
- Add a hurdle

# Deadbug



## Key Points:

- **Slow and controlled** - lower for count of 4, lift over a count of 2
- Make sure to keep your **back flat against the mat** - don't let it arch
- Keep breathing normally

## Progression/adaptations:

- **One limb at a time** - arm or leg
- **Double arm/legs** - lower both legs and both arms at the same time



# Bicycle crunch



## Key Points:

- Slow and controlled
- Try and lift shoulder/back fully off the ground

## Progression/adaptations:

- Rest legs on the ground
- Slow as possible

# Superman



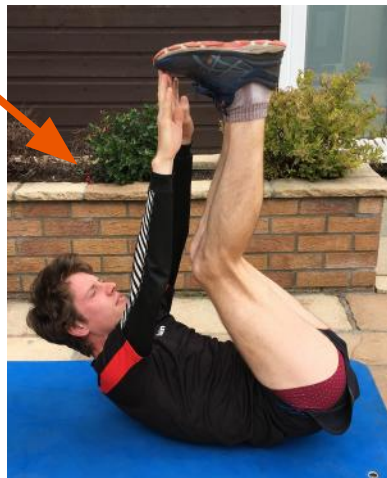
## Key Points:

- Remember about **neutral spine** and **neutral pelvis**
- Keep your **hips & shoulders level** - imagine you have tray of drinks on your back
- Slow & smooth movements
- Arm and legs parallel to the ground

## Progression/variations:

- **One limb at a time** - arm or leg
- Add some pulses in the back leg - engaging the glutes
- Meet knees and elbow under your body
- **Instead of table-top, superman but starting in a plank position**

# Toe touches



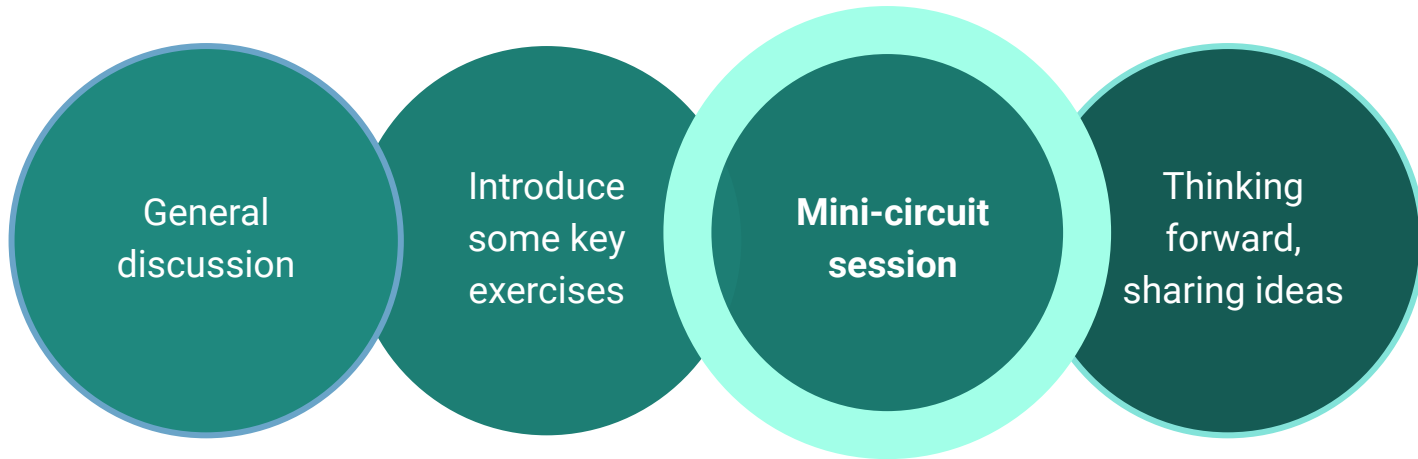
## Key Points:

- Legs as straight as you can
- Crunch up as far as you can

## Progression:

- Bent legs or legs on floor
- Add in a leg raise
- Many different crunch-based exercises for variety: standard crunch, sit-up, reverse crunch, V-sits etc. etc.

+ comfort break



# How this is going to work...



Warm-up

10 exercises - we'll tell you which exercise is next

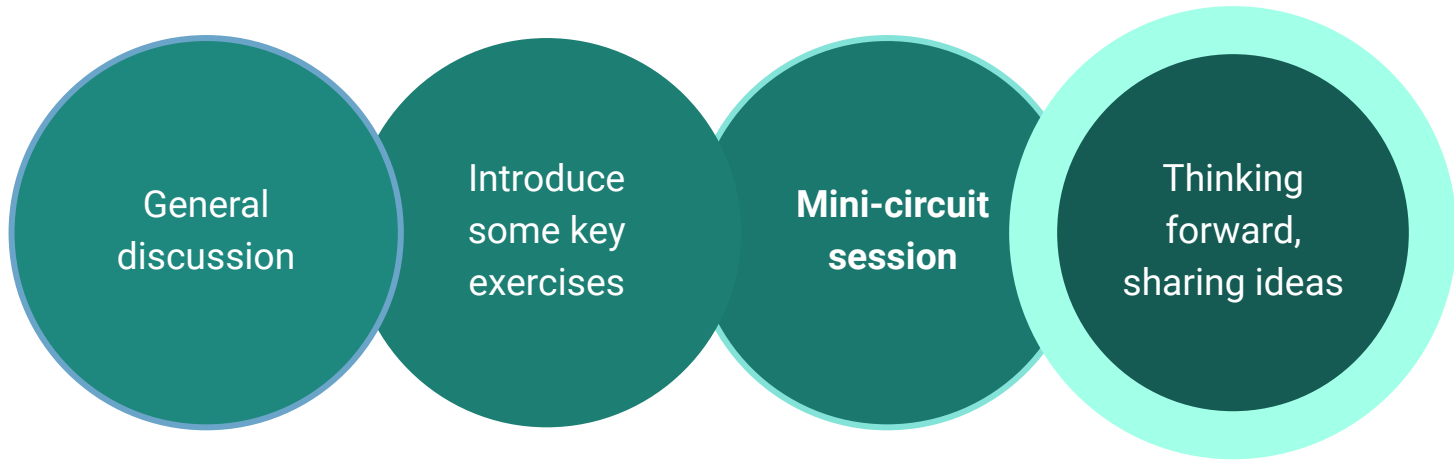
**Perform each exercise for 40 seconds**

*(if it's a single leg exercise, we'll say half-way)*

**15 seconds rest** between exercises

We'll run through the **circuit twice**

1. Glute bridge
2. Deadbug
3. Calf raises
4. Side glute raise
5. Bicycle crunch
6. Single leg balance
7. Superman
8. Lunge
9. Toe touches
10. Hopping





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# Ideas sharing

## Any comments/questions

Resources - will send out via email

Do **you** have anything you think would be helpful to share?

[zoe.h.harding@gmail.com](mailto:zoe.h.harding@gmail.com)