



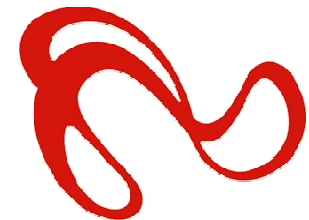
NATIONAL FENCING  
ACADEMY

# Strength and Conditioning for the British Fencing National Academy

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BRITISH FENCING



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at Middlesex University

# Presentation Objectives

- Needs Analysis
- National Academy S&C Goals
- Physical Literacy Skills (PLS)
- Performance Preparation (PP)
- Fitness Testing

## But first... S&C Proverbs

- The *Pareto Principle* (80-20 rule)
  - 80% of the effect from 20% of the cause
- “*Look after the pennies and the pounds will take care of themselves*”
- How do these relate to the PLS, PP and Fit-Test?

# ***The Relativity of Truth***

# Needs Analysis (What should we Train?)

Physical Quality	Low	Medium	High
Flexibility/mobility			
Muscle Symmetry			
stability			
Power/explosiveness/speed			
Strength			
Aerobic capacity			

# LTAD

- Which would benefit fencers most: basketball or jogging?
- Youth Olympics vs. Professional athletes
- The youth of today vs. The youth of yesteryear

# National Academy S&C Goals

1. S&C Education (athletes and coaches)
2. Mobility
3. Strength symmetry/muscle balance
4. Exercise competency
5. Increase power and movement economy  
(however, these are more by-products of goals 2, 3 and 4)
6. Actually achieve above goals!

# Physical Literacy Skills (PLS)

Coaching Phase 1			Coaching Phase 2			Coaching Phase 3		
Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9
Calf	Bent over scapula retractions	Walking high knee lunges	Ankling	Split jerk	Single leg SLDL	Single leg jump and stick	Alternate lunging	Single leg squat
Quads			Continuous jumping	Drop split snatch	Side shuffles		Scissor lunge	
Hip flexor	Glute Bridge	Jump and stick						
Hams	Overhead squat (inc movement screening)							
Lats								
Pecs								
PP1			PP2			PP3		

# Performance Preparation (PP1)

Level 1	
Performance Prep	Cool-Down
<ol style="list-style-type: none"><li>1. 2-4-2-dom (<i>slow then medium</i>)</li><li>2. 2-4-2-non-dom (<i>slow then medium</i>)</li><li>3. Over head squats (OHS) (<i>10 reps</i>)</li><li>4. Scapular retraction (<i>10 reps</i>)</li><li>5. Glute bridge (<i>10 reps, with 3sec holds</i>)</li><li>6. OHS (with jump through heels) (<i>10 reps</i>)</li><li>7. Walking high knee lunges (<i>10 reps each leg</i>)</li><li>8. Jump and stick (<i>10 reps</i>)</li><li>9. 2-4-2-non-dom (<i>slow, medium, then fast</i>)</li><li>10. 2-4-2-dom (<i>slow, medium, then fast</i>)</li></ol>	<ol style="list-style-type: none"><li>1. 2-4-2-non-dom (<i>medium then slow</i>)</li><li>2. Stretches (<i>30secs per stretch</i>)</li><li>3. Movement screen and corrective stretching (<i>see movement screen worksheet</i>)</li></ol>

# Performance Preparation (PP2)

Level 2	
Performance Prep	Cool-Down
<ol style="list-style-type: none"><li>1. 2-4-2-non-dom (<i>slow then medium</i>)</li><li>2. 2-4-2 Side shuffles (<i>slow then medium</i>)</li><li>3. Single leg SLDL (<i>5 reps per lead leg</i>)</li><li>4. Walking high knee lunges (<i>10 reps each leg</i>)</li><li>5. Over head squats (with jump through heels) (<i>10 reps</i>)</li><li>6. Ankling (10 taps x 3 sets)</li><li>7. 3 x Continuous jumps and then stick the landing on the last jump (<i>5 reps</i>)</li><li>8. Split jerk (<i>5 reps per lead leg</i>)</li><li>9. Drop split snatch (<i>5 reps per lead leg</i>)</li><li>10. 2-4-2 Side shuffles (<i>slow, medium then fast</i>)</li><li>11. 2-4-2-non-dom (<i>slow, medium, then fast</i>)</li><li>12. 2-4-2-dom (<i>slow, medium, then fast</i>)</li></ol>	<ol style="list-style-type: none"><li>1. 2-4-2 Side shuffles (<i>medium then slow</i>)</li><li>2. 2-4-2-non-dom (<i>medium then slow</i>)</li><li>3. Stretches (<i>30secs per stretch</i>)</li><li>4. Movement screen and corrective stretching (<i>see movement screen worksheet</i>)</li></ol>

# Performance Preparation (PP3)

Level 3	
Performance Prep	Cool-Down
<ol style="list-style-type: none"><li>1. 2-4-2-non-dom (<i>slow then medium</i>)</li><li>2. 2-4-2 Side shuffles (<i>slow then medium</i>)</li><li>3. Walking high knee lunges (<i>10 reps each leg</i>)</li><li>4. Single leg jump and stick (<i>10 reps each leg</i>)</li><li>5. Single leg squat (<i>3 reps per leg</i>)</li><li>6. Over head squats (with jump through heels) (<i>10 reps</i>)</li><li>7. Drop split snatch (<i>5 reps per lead leg</i>)</li><li>8. Alternate lunging (<i>5 reps per leg</i>)</li><li>9. Scissor lunge (<i>5 reps per leg</i>)</li><li>10. 2-4-2 Side shuffles (<i>slow, medium then fast</i>)</li><li>11. 2-4-2-non-dom (<i>slow, medium, then fast</i>)</li><li>12. 2-4-2-dom (<i>slow, medium, then fast</i>)</li></ol>	<ol style="list-style-type: none"><li>1. 2-4-2 Side shuffles (<i>medium then slow</i>)</li><li>2. 2-4-2-non-dom (<i>medium then slow</i>)</li><li>3. Stretches (<i>30secs per stretch</i>)</li><li>4. Movement screen and corrective stretching (<i>see movement screen worksheet</i>)</li></ol>

# Gym-Based PLS

Coaching Phase 1 (Agonist Strength)			Coaching Phase 2 (Antagonist Strength)			Coaching Phase 3 (Power)		
Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9
Over head Squat	Back squat  Front squat	Deadlift	Stiff leg deadlift  Nordics	Bent over row	Wide grip chins	Drop jump	Squat Snatch  Split Squat snatch	Squat Clean  Split Jerk

# S&C Coaching – what to expect

- All coaching sessions consist of learning a set of exercises from the PLS
- All fencers start by learning the exercises from coaching phase 1 i.e., the exercises in Levels 1-3
- Once a fencer is competent at **ALL** exercises of a coaching phase, they can progress onto the next coaching phase (*but not before*)
- All coaching sessions conclude by learning the PP that corresponds with the current coaching phase i.e., coaching phase 1 = PP1, coaching phase 2 = PP2 and coaching phase 3 = PP3

# S&C Coaching (cont)

- Basically, the PP, which is used as a warm-up to all training sessions and competitions, also acts as an S&C session
- Because the PP's are designed to include all the exercises of its corresponding coaching phase, fencers are always practising, improving and progressing
- Fencers should aim to achieve all phases within 18mo
- Once all coaching phases are complete, fencers move on to the gym-based PLS
- **The cool-down should not be neglected, this is just as important as the PP**

## Fitness Testing

1. Anthropometry (weight, height, sitting height)
2. Countermovement jump (CMJ)
3. Single-leg CMJ (dom vs. non-dom)
4. 2-4-2 Fencing agility test
5. PLS Test (Indicates level achieved only)

# Fitness Testing – what to expect

- Some S&C sessions will be used to test the physical fitness of the fencers
- The testing battery is designed to be sport-specific yet time and resource efficient
- The PLS test is perhaps the most important test
- This is where the fencers exercise competency is assessed. Fencers must be competent at **ALL** exercises within a level to be awarded that level
- Once fencers are deemed competent at **ALL** exercise of a coaching phase, they can progress on to the next coaching phase (*but not before*)

# **Test Results form The National Academy Camp in 2010**

(there is no significant difference between swords!)

### Descriptive Statistics For Academy Males Fencers

		Jump height (inches)	Dominant leg Jump height (inches)	Non-Dom leg Jump height (inches)	Leg asymmetry (%)	2-4-2 Agility (s)
N	Valid	54	53	53	53	47
	Missing	0	1	1	1	7
Mean		<b>18.4</b>	<b>9.5</b>	<b>8.7</b>	<b>8.6</b>	<b>8.1</b>
Std. Deviation		<b>2.5</b>	<b>1.9</b>	<b>1.8</b>	<b>2.0</b>	<b>0.7</b>
Best score		<b>25.8</b>	<b>16.1</b>	<b>15.9</b>	<b>3.0</b>	<b>6.3</b>

### Descriptive Statistics For Academy Females Fencers

		Jump height (inches)	Dominant leg Jump height (inches)	Non-Dom leg Jump height (inches)	Leg asymmetry (%)	2-4-2 Agility (s)
N	Valid	34	33	34	33	33
	Missing	0	1	0	1	1
Mean		<b>14.7</b>	<b>8.3</b>	<b>7.4</b>	<b>7.3</b>	<b>9.0</b>
Std. Deviation		<b>2.3</b>	<b>1.7</b>	<b>1.4</b>	<b>1.7</b>	<b>0.8</b>
Best score		<b>21.6</b>	<b>12.9</b>	<b>11.1</b>	<b>4.3</b>	<b>7.4</b>

Descriptive Statistics by Sword and Gender

		N	Mean	Std. Deviation	Best Score
Jump height (inches)	ME	19	18.5	2.5	25.8
	MF	22	18.6	2.8	25.7
	MS	13	17.9	1.9	21.1
	WE	7	15.0	3.3	21.6
	WF	17	14.8	2.0	19.0
	WS	10	14.2	2.2	18.8
Dominant leg Jump height (inches)	ME	19	9.5	1.2	12.1
	MF	22	9.8	2.2	16.1
	MS	12	8.9	2.4	12.1
	WE	6	8.9	1.8	12.3
	WF	17	8.3	1.8	12.9
	WS	10	7.8	1.4	9.7
Non-Dom leg Jump height (inches)	ME	19	8.9	1.5	11.8
	MF	22	9.0	2.1	15.9
	MS	12	8.0	1.6	10.8
	WE	7	8.2	2.0	11.1
	WF	17	7.3	1.2	9.2
	WS	10	7.2	1.3	10.0
Leg asymmetry (%)	ME	19	8.6	1.2	6.6
	MF	22	8.9	2.2	5.6
	MS	12	8.0	2.5	3.0
	WE	6	8.0	1.8	6.2
	WF	17	7.4	1.8	4.3
	WS	10	6.9	1.4	5.1
2-4-2 Agility (s)	ME	15	8.0	0.6	6.8
	MF	20	8.4	0.7	6.7
	MS	12	7.9	0.7	6.3
	WE	6	9.1	0.3	8.7
	WF	17	9.0	0.9	7.4
	WS	10	9.1	0.8	8.0

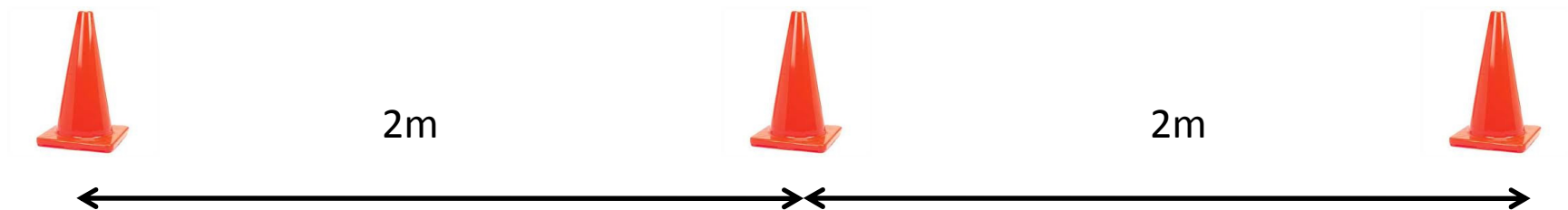
# **Athlete Testing Protocols**

# Countermovement Jump (CMJ) Test

- Hands **MUST** be on hips throughout
- Athlete jumps as high as possible (do NOT coach the athlete)
- Athletes should **NOT** tuck their knees
- **Best of 3** (but of course let them practice first and record all 3 trails)
- This protocol is repeated for the single-leg CMJ test

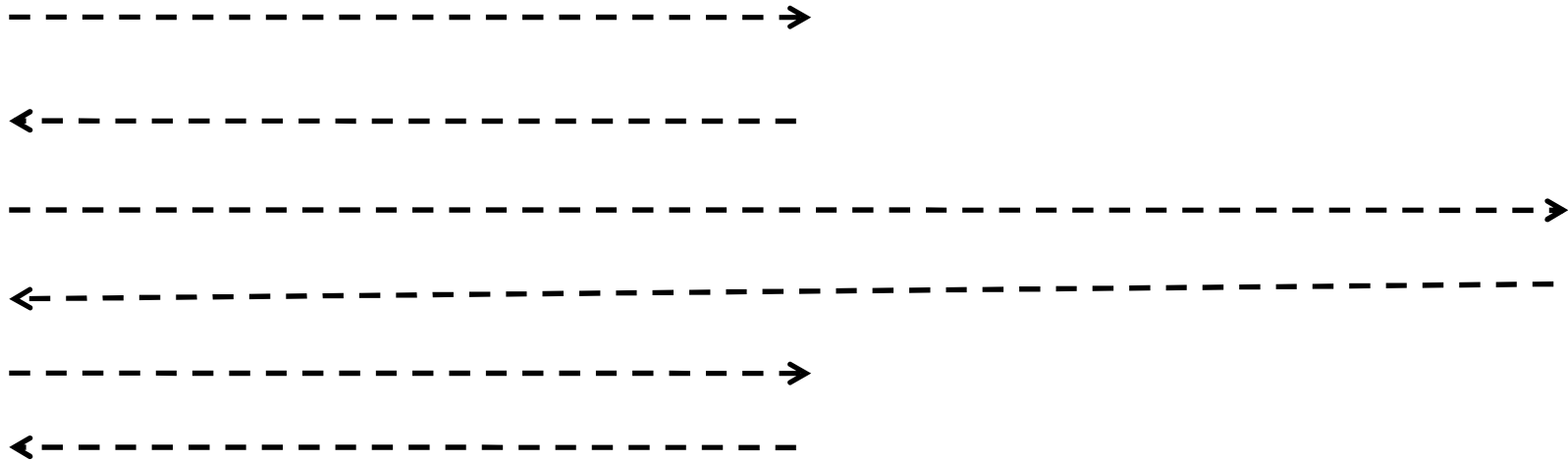
# 2-4-2 Fencing Agility Test

- Athletes complete a 2-4-2 meter shuttle run (see next slide)
- Athlete **MUST** use fencing footwork (If footwork is not appropriate the test is terminated)
- Some part of the front foot must cross the 2 and 4m line
- When starting the test or returning from a shuttle, the whole of the front foot must move behind the 0m line
- Best of 3 (but of course let them practice first and record all 3 trails)

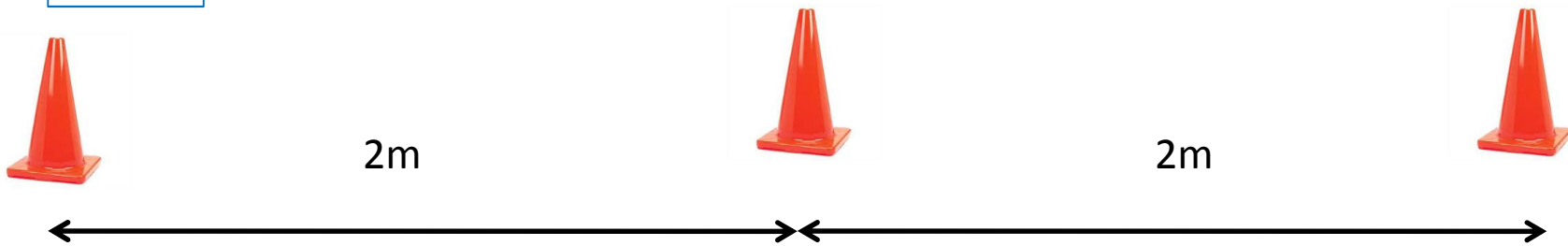


# 2-4-2 (cont)

Start



Finish



***Questions?***