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## Functional Strength & Conditioning - Lecture 1



Presented by: Wayne Rodgers

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## FUNCTIONAL STRENGTH AND CONDITIONING Lecture 1



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## Lecture 1 - Functional Training Principles

The physiotherapist's need for S&C skills

The big picture

Creating balanced fitness training programs

Defining functional strength training

Asymmetrical and symmetrical loading

Key principles

Functional strength exercises



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### Why does a physiotherapist need S&C skills?

S&C receives little attention in both undergraduate and post graduate training

Low load motor control exercises do not:

- correct dysfunctions associated with higher loads
- improve stability under high loads
- encourage hypertrophy



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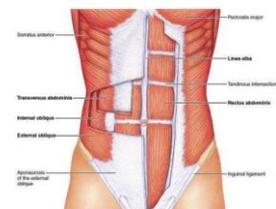


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### Why does a physiotherapist need S&C skills?

*Mottram, Hodges, Vleeming and Lee all agree:*

Both the local (inner unit) and global (outer unit) muscle systems must integrate together for efficient normal function and optimal core control.



## The Strength and Conditioning Team



Why would **you** make a great **functional strength and conditioning specialist**?

What is your role in the strength and conditioning team?

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## The Strength and Conditioning Team

Your Role is to:

Plan (and possibly delivery) high-quality functional strength & conditioning programs.

**Balanced**, appropriate and effective programs



## Balanced Training Programs

What would you recommend to a client who is looking for a well balanced fitness training program for long-term good health and wellbeing?

What types of exercise would you include over a 7-day period?



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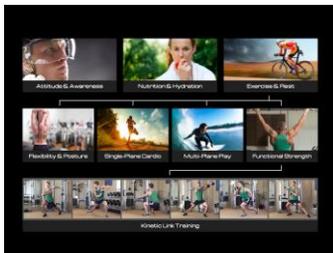


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## Balanced Training Programs

Functional Strength	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Single-Plane Cardio	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Multi-Plane Play	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Flexibility & Posture	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15

## The Big Picture



## Defining Functional Strength Training



as opposed to traditional gym training

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### Functional

Favoured by athletes  
Movement may involve  
trunk rotation & limbs  
crossing the midline

Movements in multiple  
planes

Enriches balance and  
proprioception

Requires co-ordination and  
concentration

### Traditional

Favoured by body-builders  
Rarely involve trunk rotation  
or limbs crossing the midline

Movements typically in a  
single plane of motion

Rarely effects balance or  
proprioception

Rarely requires co-ordination  
concentration

## Functional Strength Training Definition

Any resistance training modality that serves the purpose for which it was intended.

Strength training aimed at improving the ability to perform daily physical tasks, occupational or sports specific motor activities with ease, efficiency, strength and control.

A good functional strength training program should demonstrate biomechanical balance.

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## Symmetrical vs Asymmetrical

(Comerford 2004)

**Symmetrical** = "Traditional Strengthening"

typical sagittal plane dominant

no axial rotation

"rotation eliminated" exercises

may encourage trunk rigidity

## Symmetrical vs Asymmetrical



Symmetrical Superior Push

## Symmetrical vs Asymmetrical



Symmetrical Posterior Pull

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## Symmetrical vs Asymmetrical

(Comerford 2004)

**Asymmetrical** = "Core Strengthening"

movement may occur across planes

axial rotation resisted (isometric contraction)  
or axial rotation controlled (concentric –  
eccentric)

"rotation challenged" exercises

## Symmetrical vs Asymmetrical



Asymmetrical Superior Push

### Symmetrical vs Asymmetrical



Asymmetrical Posterior Pull

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### Functional Strength - Key Principles

Dynamic Stability

Stability Driven Training

Kinetic Link Principle



### Dynamic Stability

The ability to maintain joint control throughout a full range of motion under variable loading conditions.

The ability to maintain, achieve or return to optimal (neutral) joint position.



### Defining Dynamic Stability

Dynamic stability (core and peripheral) is not rigidity but rather optimal motion control.

Stabiliser muscles are in a transient state of co-contraction reflecting the variable load demands of the motor task.

*Watch the language used to describe stability.*



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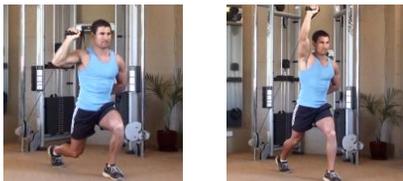
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### Dynamic Stability

Effective load transfer between upper and lower limbs can only occur through a controlled core - an essential element of the *Kinetic Link Principle*



### Stability Driven Training

Load choice is driven by stabiliser strength and adequate evidence of control

Train the prime-movers only to the extent that the stabilisers provide sufficient support.



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### Stability Driven Training

Closely observe movement and monitor for potential "break-downs" in technique and control.

Is the performance effected by:  
- poor instruction (technique issue)  
- or true biomechanical imbalances

*What are the "weakest links"?  
What is inhibited? .... What is hypertonic?*

### Stability Driven Training



### Kinetic Link Principle

Definition

A series of sequentially activated body segments

Movement at one segment affects adjacent segments in a positive manner to generate:

- greater force and / or speed
- a more biomechanically advantageous body position.

Co-ordinated NATURAL full body movement from toes to finger tips via a controlled core.

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### Kinetic Link Principle

The concept of the linked / inter-related body:

- Provides a framework for assessing and analyzing human movement.

Assists in discovering the biomechanical culprits behind injuries

.... Discover the WHY not just the WHAT.

- Provides a rationale for the use of full-body movement in exercise programs.

### Functional Strength Training Exercises

#### *full-body integrated movement patterns*

upper body actions are performed in conjunction with an appropriate lower body movement pattern or lower body position

**no seats and no benches**

### Functional Strength Training Exercises



Superior Push (asymmetrical)

Superior Push SA / Dumbbell + Split Squat

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### Functional Strength Training Exercises



Closing Arc (asymmetrical)

Closing Arc SA / Mid-Cable + Weight Shifting Squat

**Functional Strength Training Exercises**



Anterior Push (asymmetrical)

Anterior Push SA / High-Cables + Split Squat

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**Functional Strength Training Exercises**



Opening Arc (symmetrical)

Opening Arc L >H DA / Med Ball + Parallel Squat

**Functional Strength Training Exercises**



Closing Arc (asymmetrical)

Closing Arc TRV REC / Mid -Cables + Split Squat (S)

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**Functional Strength Training Exercises**



Posterior Pull (asymmetrical)

Posterior Pull SA / Dumbbell + Bent-over Split Squat (P)

# FUNCTIONAL STRENGTH AND CONDITIONING

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# Thank you

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Coming up next

## Functional Strength and Conditioning – Part 2

Sports physiotherapist for national and international sports teams with over 1500 hours of CPD delivery over the past 12 years.

**Wayne Rodgers**

