

29/7/2013

SSEH1102

## Human Movement – Improving Athletic Performance (Lecture 1)

### Talent Identification

What is talent ID?

- A method that ensures people with certain natural physical characteristics are matched with a sport for which they have a clear advantage

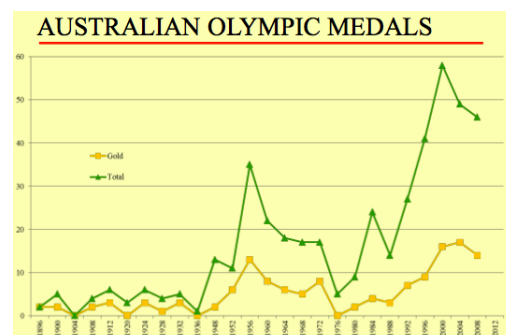
Why Use Talent ID?

- With such a small population, Australia cannot rely on a 'trial & error' basis by which sufficient champions in all sporting endeavours emerge

### Recent Developments in Sport

Sporting performance has improved over the last 100 years due to:

- Greater world population
- Better living standards
- Better sporting equipment and facilities
- The influence of sport science
- Influence of sport medicine
- Improved coaching education



### What is Functional Anatomy?

A field of sport science that relates to the physical capacities of humans and how they affect performance

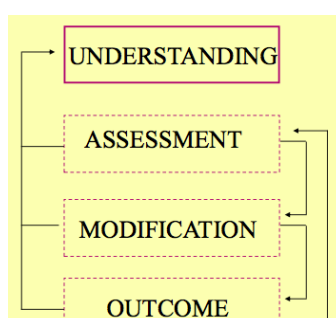
- Body shape
- Body composition
- Body proportions
- Balance & Agility
- Strength
- Power
- Speed
- Flexibility

### Improving Performance

How can we use our understanding of talent ID and functional anatomy to improve athletic performance? We propose a 4 Stage approach for the improvement of athletic performance.

#### The 4 Stage Approach

1. Understanding
2. Assessment
3. Modification
4. Outcome



## Understanding

We first need to understand how structure relates to function. That is how morphology or structure provides an advantage or disadvantage for the performance of a certain movement that make up a sports performance.

We also need to understand the interrelationship between physical capacities. That is if we modify one capacity, what affect might it have on another?

- Body Type and Composition are related
- Strength, Power and Speed
- Flexibility and Posture
- Proportionality has an influence on most

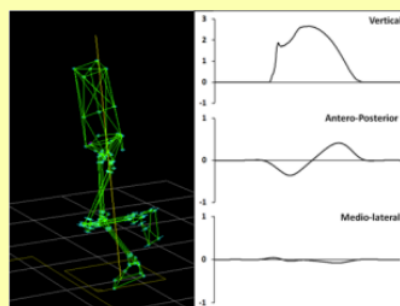
## Assessment

We need to be able to measure these physical capacities. At the same time we need to understand the factors which affect the resulting scores from these tests, the meaning of the variables and their limitations (Body Type, Body Composition, Proportionality, Flexibility, Strength, Power, Speed)

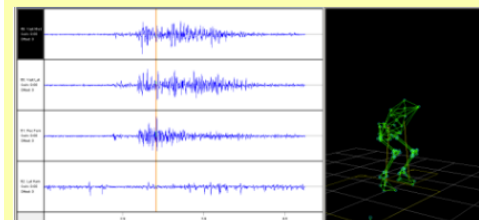
Subjective analysis with/without visual aids

- Spectator analysis
- Cause and effect analysis
- Skill analysis

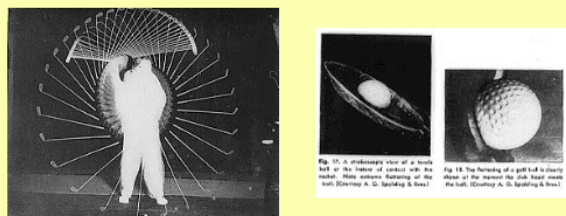
### **Dynamometric analysis**



### **Electromyography analysis**



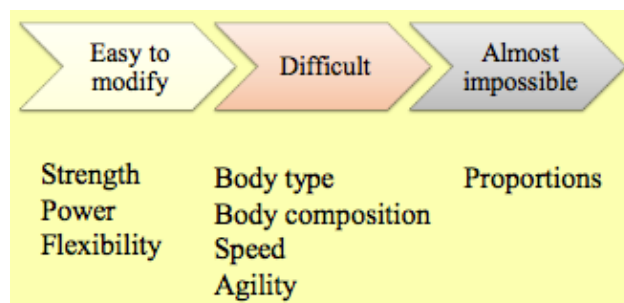
### **Image analysis**



## Modification

Three strategies are used in the following order to achieve best (most efficient) results:

- Alter the physical capacities to suit a biomechanically sound technique
- Alter the technique to suit the physical capacities
- Alter both to arrive at the best combination



## Outcome

The proof of the pudding is in the eating!

- Has modification been successful or not?
- Should we attempt further modification?
- Do we need to modify the technique slightly to accommodate this new structure?