SSEH1102 Final Exam Notes

*This preview includes part of lecture 1 and part of a Pre-Lab 1 to give you a general idea of how comprehensive these notes are.

Lecture 1a - Overview & Improving Athletic Performance

Looking at the anatomy of the human body and how it relates to performance.

1. Body shape
2. Body composition
3. Body proportions
4. Strength
5. Fitness
6. Power
7. Speed
8. Flexibility
9. Agility & balance
10. Growth & development

Ch. 1 - The Assessment & Modification Model

Choosing a team for dodgeball:

- *Agility
- *Body size
- *Speed
- *Power
- Hand-eye coordination
- Acceleration

Talent Identification

What is Talent ID?

- One method for ensuring that people with certain natural physical characteristics are matched with a sport for which they have a clear advantage.

Why is it used?

- With such a small population, Australia can't rely on a **"trial & error"** basis by which sufficient champions in all sporting endeavours emerge.
- Want to focus our money/resources on those likely to be successful in sport.

How does it work?

- Stages & levels
- Talent scouts
- Measurements - height, % fast twitch, % slow twitch etc

What aren't we as good as we think we could be?

- Financial support for athletes and talent ID programs.
- A lot of our best athletes will be pulled into AFL.
- Many tall agile females choose netball over tennis typically.
- Environmental conditions - eg. we're not great in winter sports because we don't have snow in Australia.
- Small population to compete against to represent Australia, compared to China, Russia, America.

Why have we seen sporting performance improve over the last 100 years?

- Greater world sports population
- Better living standards
- Better sports equipment & facilities
- The influence of sports science
- The influence of sports medicine
- Improved coach education
- Research

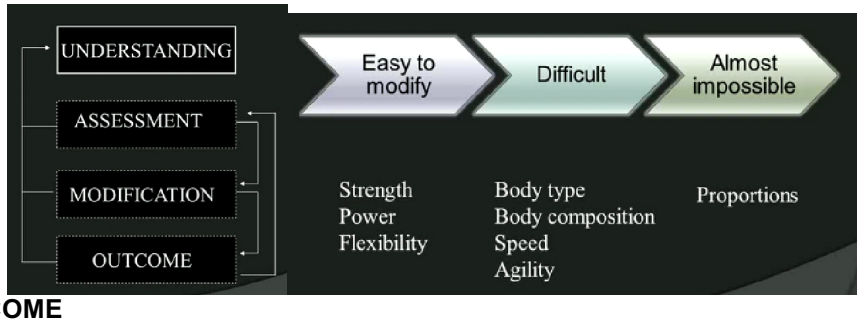
- Improved nutrition
- Training methods
- Improved techniques
- Transport

What is Functional Anatomy?

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

4 Stages to improving performance

1. **UNDERSTANDING**
   - Develop understanding of how structure relates to function. *Eg. Basketball players tend to need to be tall, closer to ring = easier to score.*
   - That is, how human morphology or structure provides an advantage or disadvantage for the performance of certain movements which make up sports performance.
   - Might have to look at a child's parents to assess what they'll look like when they're fully grown
2. **ASSESSMENT**
   - Measure these physical capacities - eg. Body type, body composition, proportionality, flexibility, strength etc
   - We also need to understand what factors (eg. diet, training methods) affect the resulting scores from these tests.
   - We also need to understand the meaning (are these variables meaningful to our sport, eg. shoulder flexibility irrelevant to running) and limitations of these variables.
   - Subjective Analysis with/without visual aids
     - Spectator analysis
     - Cause & effect analysis
     - Skill analysis
   - Objective Analysis
     - Image analysis
3. **MODIFICATION**
   a. **Alter the physical capacities** to suit a biomechanically sound technique
   b. **Alter the technique** to suit the physical capacities
   c. **Alter both** to arrive at the best combination.



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

L1a Questions

1. ***What are the 4 stages for the improvement of athletic performance?***
   1) Understanding
   2) Assessment
   3) Modification
   4) Outcome
2. ***What methods are used to assess technique?***
   - Subjective analysis
     - Spectator analysis
     - Cause & Effect analysis
     - Skill analysis

- Objective analysis
    - Image analysis

3. ***What physical characteristics are easy to modify?***
   Strength, power, flexibility

L2b - Pre Lab 1 (Anthropometric basics - Landmarking)

For theory exam:

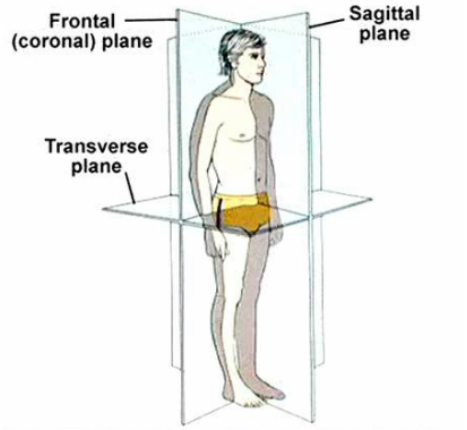
- How would you measure this and that
- What things would you need to consider when measuring these variables

Collecting Lab Data

- ***Mean of 2 scores***. If these scores differ greatly, we measure a third time.
- If we ***measure 3 times, we record the median (middle number).***
- Errors could come from:
    - using equipment incorrectly
    - reading measurement incorrectly
    - writing measurement down incorrectly.
    - Participant wasn't standing incorrectly
    - Didn't mark up correctly.

Some terminology

- Planes of the body:



Landmarking techniques

- Mark on the right side
- Use medium-tip pen
- Take care not to drag skin
- Recheck the mark by palpating the feature again.
- Must be in the anatomical position

Common Landmarks

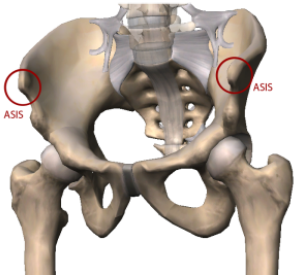
1. **Vertex** - top of the head
2. **Acromiale** - superior, lateral border acromium p.
3. **Radiale** - head of radius
4. **Stylion** - distal point of styloid p. of radius
5. **Dactylion** - end of middle finger
6. **Iliocristale** - superior lateral iliac crest
7. **Iliospinale** (Most inferior & medial surface of the ASIS)
8. **Trochanterion** - superior lateral trochanter of femur
9. **Tibiale laterale** - lateral border of tibial plateau.

Additional Landmarks for Skin Folds

1. Tricep SF
2. Biceps SF

3. Subscapular SF
4. Iliac Crest SF
5. Supraspinale SF
6. Abdominal SF
7. Front thigh SF
8. Medial calf SF

Acromiale *Most superior & lateral border of acromium process* - Use your pen to identify the lateral border. Basically just roll the pen off the acromium process and it will land in squishy skin. That point is where you want to mark. - Palpate the superior aspect - Mark & recheck - Stand by their side/slightly behind.	
Radiale *Most proximal & lateral border of the head of the radius.* - Subject's arm in mid-pronation - Palpate the joint space - Identify the proximo-lateral border - Mark & recheck - May also help if you ask subject to pronate & supinate - the head will rotate.	
Stylion *Most distal point on the styloid process of the radius* - Palpate the space between styloid & metacarpal 1 - Identify the most distal aspect - Mark & recheck	
Dactylion *Most distal aspect of the 3rd digit on the hand* - No need to mark	

Iliocristale - Supero-lateral aspect of the iliac crest - For most people, this is in the **mid-axillary line! (the arm-pit)** - Subject puts arm across chest to create space. - If they're short, stand them up on a box.	
Iliospinale *Most inferior & medial surface of the ASIS* - Palpate the inferior aspect of the ASIS	 
Trochanterion *Most superior & lateral aspect of the greater trochanter on the femur* - Use the palm of your hand to find the posterior aspect of Greater Trochanter - Palpate around to the superior aspect using your thumb - A lot of errors made in this landmark!	
Tibiale Laterale *Most superior border of the tibial plateau. Just under the lateral condyle of the femur.* - Palpate the joint space from the lateral side, towards the patella. - Identify the most superior aspect. - Get them to stand up on a box. - Usually lines up with crease at back of knee (guide only).