SSEH1102 EXAM NOTES

Topics:

1. **SOMATOTYPE**
2. **ANTHROPOMETRY**
3. **BODY COMPOSITION**
4. **PROPORTIONALITY**
5. **EXERCISE PHYSIOLOGY**
6. **STRENGTH, SPEED, POWER**
7. **FLEXIBILITY**
8. **AGILITY**
9. **NUTRITION**
10. **GROWTH & DEVELOPMENT**

SOMATOTYPE

Calculation =

Adaptations	Give rise to strengths Different between species and between different populations - Ethnicity - Gender - Age		
Physical Capacities	EASY TO ALTER Endurance Strength Power Flex	DIFFICULT TO ALTER Body type Body composition Speed Agility	IMPOSSIBLE TO ALTER Proportions Height/stature Lever length Fibre type
Altering Capacities	Some not easily altered - Lever length - Height Some can be altered by remedial action - Body fat - Muscle mass - Bone density		
Biomechanical Trade-offs	Size vs agility Size vs power - Consider specific demands for sports to judge what side of the trade-off is desirable		
Methods to Assess Tech	- What capacity are you measuring - What tools do you need to get the precision you require - Subjective = watching and reviewing o Spectator analysis		

<table>
<tr><td colspan="2"></td><td>

Cause and effect analysis
Skill analysis
Can use visual aids (videos)

- Objective = measuring
</td></tr>
<tr><td colspan="2">Changing Additive Features</td><td>Change in power = speed + strength
Changing strength causes changes in power</td></tr>
<tr><td colspan="2">Talent ID</td><td>Process of identifying promising young talent and accelerating its progress
- Use to find gifted youth athletes
- Talent is exposed to specialised training/coaching
- The most appropriate environment helps turn giftedness into talent
- Matching athletes to a sport
- Understand the effects of ageing to time talent ID detection
- Understand functional anatomy to know what traits to test and how to measure them</td></tr>
<tr><td colspan="3">DETECTION → IDENTIFICATION ↕ DEVELOPMENT ↔ SELECTION</td></tr>
<tr><td colspan="2">4 Stages of Athletic Performance Improvement</td><td>1 UNDERSTANDING of sport and athlete
2 ASSESSMENT of athlete/profiling athlete
3 MODIFICATION of athlete if required/possible
4 OUTCOME</td></tr>
<tr><td>1</td><td>UNDERSTANDING</td><td>Of how structure and function relate
- Height vs agility according to COM
- Morphology provides advantage/disadvantage for performance
- What physical capacities do we look for</td></tr>
<tr><td>2</td><td>ASSESSMENT</td><td>Measuring physical capacities
- What factors affect results of tests
- What are objective/subjective tests
- What level of precision is necessary</td></tr>
<tr><td>3</td><td>MODIFICATION</td><td>Changing physical capacities to suit required biomechanical techniques
- Does athlete require modification
- Athlete must have required traits
- How to modify/train capacities
- Altering techniques to suit capacities (height, lever length)
- Altering technique and capacities to create the best combo
Modifications to achieve peak athletic performance
Not all athletes can be modified to progress in sport</td></tr>
<tr><td>4</td><td>OUTCOME</td><td>SUCCESS OF MODIFICATION YES
↓ NO
ATTEMPT FURTHER MODIFICATION YES
↓ NO
MODIFY TECHNIQUE TO ACCOMMODATE NEW PHYSICAL STRUCTURE
YES</td></tr>
</table>

	NO
Culture and Popular Sports	Aus/NZ = team sports Talent ID used to find athletes for less popular sports (cycling/rowing ect.)
Olympics	1956 - Greater success - In Australia, more athletes 1976 - Lack of success lead to encouragement in sports research - AIS formed = AUSTRALIAN INSTUTUDE OF SPORT - More government funding, training, transport
Recent Sporting Developments	- Increase in population - More participation from all ethnicities - Improved equipment (synthetic tracks, rackets) - Better/more facilities - Knowledge and education for sport science and medicine - Coach education

CHPT 1 NOTES
COMBINATION OF FACTORS TO ACHIEVE MAX POTENTIAL • Physical capacities specific to sport • Development of biomechanical techniques • Physiological capacity (fitness) for sport • Work ethic and appropriate attitude • Opportunity to compete with similar level athletes
COACH REQUIREMENTS/VALUES • Set of experiences • Knowledge of biological/behavioural athletic requirements • Specialised knowledge of trends in sport • Create structured development plan *Best coaches have understanding of sport science*
ANAEROBIC TRAINING = Resistance Fatigue/lactate Fast twitch (white)
AEROBIC TRAINING = Endurance Slow twitch

SOMATOTYPE = quantified description of morphological conformation of an individual	
FUNCTIONAL ANATOMY = how physical capacities affect performance	
Endomorphy	*Relative fatness*
Mesomorphy	*Relative muscularity*

Ectomorphy	*Relative linearity*
Sheldon	Closed 1-7 rating scale Endo = round, soft, large head, wide face, short limbs Meso = square, hard, long neck, muscular limbs, sturdy pelvis Ecto = linear, fragile, long, slender, long limb
"Gold Standard" to measure somatotype	Anthropometry = scientific study of measurements and proportions of body + Photoscopic method = ratings made from standardized photograph
Heath-Carter	Anthropometry + Photoscopic method • Ratings open ended to accommodate extremes
Michealangelo's David	- Perceived as true mesomorphy - 1-7.5-2
Botticelli's Birth of Venus	- Perceived ideal body shape for females - Endo-ectomorph - 5-3-2
3D Scales	- Good for comparisons and tracking with age - Central = 3's to 4's - Mean of somatotypes = add and divide each number SAD = SOMATOTYPE ATTUDINAL DISTANCE - Distance between 2 somatotypes SAM = SOMATOTYPE ATTUDINAL MEAN - Scatter of set of somatotypes

Olympic Boxing

- *Men*
    - *Many classes, by weight (kgs)*
    - *See somatotype different between classes*
    - *Athletes in same class of similar shape/composition*