

## Exsamples

### Exam Motor Learning and Development

#### 1. Present four reasons suggested by the authors as to why we need to study skills?

1. skills are used throughout life 2. important for teachers and coaches to know how to teach skills most effectively 3. high level skills need more practice 4. proficiency with job skills are necessary to produce effective work

#### 2. Explain the differences between an open skill and closed skill. (4 marks)

An open skill is one that is performed in a relatively unpredictable environment, such as playing soccer, driving a car on the highway, or mountain biking A closed skill is one that is performed in a relatively predictable environment, such as swimming in a pool, running on a treadmill, or biking around a track

#### 3. Define and give practical examples of RT and MT. (4 marks)

RT: reaction time, comes before decision making, a reaction MT: movement time, time from the start of the movement until the end Response time is RT + MT.

#### 4. Present and explain Donders' three stages of processing. (6 marks)

A-type: only requires stimulus detection C-type: go/no go situation - have to decide whether or not to act on several stimuli B-type: choice - RT: respond to only one of several stimuli

#### 5. Define and give an example for each of the three types of memory systems. (6 marks)

Short-term sensory store (STSS): lots of sensory info comes in via parallel channels, only held for a brief time before something else fills the space.

Short-term memory (STM): "good stuff" gets moved up to short-term memory, we only care about certain things - the rest gets thrown out, we need to rehearse or we forget Long-term memory

(LTM): experiences of a lifetime, abstract storage, lots of links between sensory systems, will be remembered for a long time once cemented into place

#### 6. What is the difference between exteroception and proprioception in movement control? (4 marks)

Exteroception gives information from outside the body while proprioception gives information from the body's own sensors.

#### 7. Explain the significance of the difference between proprioception in an active body vs. a passive body. In your answer, give two examples of what this means in teaching and coaching. (4 marks)

Kinesthetic receptors provide different information in an active body vs. a passive body. Manual guidance techniques are useful only in the very early stages of a skill or in a therapy situation. In coaching or teaching, if the instructor does too much of the work the body of the performer is unable to generate accurate proprioceptive feedback. It is more productive to use passive guidance techniques only early in learning

**8. Describe the two visual systems involved in motor control, together with their strengths and weaknesses. (6 marks)**

The two visual systems are the dorsal stream and the ventral stream. Dorsal (where is it?): concerned with entire visual field, includes peripheral vision, non-conscious operation (below our level of awareness), retina – primary visual cortex – posterior parietal cortex

Ventral (what is it?): concerned with objects in the centre of the visual field, conscious perception focus, negatively affected in dim light conditions, retina – primary visual cortex – inferotemporal cortex

**9. Define the difference between optical array and optical flow and describe three areas in movement control where and how optical flow is used. (6 marks)**

As we move, the rays of light which hit our eyes collectively make up an optical array of information, the optical array changes as we move. Optical flow is the movement of light across the retina, it can tell us things like time to collision with another object, directional information about us and other objects, and our balance and stability.

**10. Schmidt & Lee provide five lines of evidence in support of the existence of motor program control. Describe these five lines of evidence. (5 marks)**

- RT in humans
- Effect of removal of feedback in humans and animals
- Blocking of a limb when primed for movement
- Strategies used by humans to stop a movement underway
- Studies of movement which arise after the startle response

**11. Describe in detail the reflex reversal phenomenon and how it is related to movement. (4 marks)**

Dealing with the decerebrate cat, examine the step cycle. If one touches the cat's foot during flexion stage of walking the leg flexes even more. If one touches the cat's foot during planting, leg extends even more. Reflex is non-conscious and fast (30-50msec).

**12. Explain Fitts' law and its importance in motor control. (5 marks)**

Fitts' law is based on a tapping task between two targets which deals with A (amplitude), W (width), and MT (movement time). If amplitude is increased it will lengthen MT, if target width is decreased it will lengthen MT. MT is constant whenever the ratio of A to W remains the same. The bottom line is that MT is related to ID (index of difficulty). We usually trade speed for accuracy in daily living. Increase speed will reduce accuracy, reduce speed will increase accuracy.

**13. Why is there error in the production of rapid movements? (5 marks)**

Motor programs specify the necessary features of a fast movement, but there are errors in translation. Muscles participating in a movement are not all pulling in the same direction. As force increases, so does inconsistency. The faster the MT the more force is required. The greater the movement amplitude the more force is required. A greater force equals greater variability and more errors.

**14. Discuss how the experimental approach in motor learning and performance differs from the differential approach. (4 marks)**

The experimental approach assumes that people are more similar than they are different, that there are universal factors which everyone possesses. And that differences among people on these factors are best characterized as error variance or “noise”. This approach focuses on comparisons of means across groups – not within groups. Differences within groups are treated as a statistical error term. The differential approach assumes that people differ in many ways. Study of individual differences focuses in on these differences, individual differences researchers are more interested in the differences within people than in the similarities across people. “Noise” is the main topic of research – not the error variance. Two types of emphases: abilities and prediction of performance

**15. Present the general motor ability hypothesis together with its hypothesized relationship to general motor educability. (4 marks)**

General motor ability = possession of an ability across many sports, this results in someone being able to become expert in many different skills. Generalized ability to learn different skills = motor educability – similar to the notion of general IQ. The bottom line is that it is a single inherited ability, which underlies all movement or motor tasks. Therefore, someone with good general motor ability should be good at all motor tasks

**16. Describe three reasons for using abilities as a basis for skill classification. (3 marks)**

- To assist the teacher/coach in designing only activities which apply to the present task being taught (help prevent the wrong methods to be used for the task).
- To assist the teacher/coach to focus on special features of the task (help the learner understand the fine points of the movement and therefore train better).
- To assist the teacher/coach to understand the task category (help match the abilities of the learner with the requirements of the task)

**17. Is it feasible to use abilities of young athletes to predict their ultimate potential? Why or why not? Be thorough in your answer. (6 marks)**

No it is not feasible, there are too many abilities to account for, not really sure of which abilities are involved in a particular skill, and contribution of abilities changes with maturation and learning

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**19. Briefly present four way in which practice can affect performance other than improving learning. (4 marks)**

- Positive instructions from a teacher can energize a learner and improve performance.
- Physical guidance from a teacher can help improve performance.
- Too much practice can produce fatigue which temporarily degrades performance.
- Mood status of the performer can result in boredom or discouragement resulting in poorer performance

**20. What is transfer of learning? What is its role in skill learning and how is it measured? (6 marks)**

Transfer happens when performance on one task is related to performance on another task: positive transfer, no transfer, or negative transfer. Transfer needs to be determined in order for people to avoid wasting time practicing things that will not transfer to real world situations. Many skills that involve serial moves can be broken down into shorter components and practiced in parts. The effects of a transfer task must always be measured against some criterion

**21. There is a problem between learning and performance in practice. What is it and how do the authors suggest a teacher/coach to resolve it? (4 marks)**

Learning involves change; it does not involve doing “the same old”. To stop learning, encourage performers to “do your best” because it results in no attempts at modifications of our behavior and results in less experimentation with movement. Set up practice sessions in which people are encouraged to attempt novel movement solutions to motor actions, this is a practice situation. Then, move to practice sessions in which people are encouraged to “do their best” this is a test situation

**22. Present the two major factors in skill retention and for each, present data from one research study which provides information relevant to the factor. (6 marks)**

Forgetting: it seems that we can remember how to ride a bicycle for many years, yet cannot remember numbers well over time. Ammons: pairing of 8 switches and lights, task was heavily cognitive – as retention interval increased, subjects first trial was similar in length to original learning task, the 1 year interval subjects almost forgot everything. Fleishman and Parker: tracking movements of hands and feet, very small retention loss even after 2 years. Discrete tasks involving cognition are not retained long, but retention of continuous tasks are

retained well. Warm-up decrement: when performance is resumed after a rest, it is often at a lower level than what it was at before the rest. Warm-up decrement: immediate decrement in motor performance after a rest, effect is finished after a few trials. Adams described a warm-up decrement as a loss of “set” (attentional focus, perceptual focus, postural adjustments, etc.). Prior to beginning performance after a rest, it is a good idea to re-establish “set”

**23. What is known about transfer in connection with early vs. later learning? (4 marks)**

Motor transfer is small: the better learned the task, the less the transfer between two similar activities. Move on to the real thing soon, do not waste time on something that is not what are really trying to do. No transfer of basic abilities: remember that abilities are genetically determined and cannot be “trained”, there are not general abilities, abilities are genetically determined

**24. Discuss what is known about transfer of part practice to whole practice for different types of skills and for motor programs. (6 marks)**

For complex skill sequences, it is often desirable to break them into smaller components and practice each component separately. If the sequence is long (serial skills), it is sometimes worthwhile to practice it in parts. Some skills cannot be broken down into components (discrete skills).

**25. What is mental practice, how is it believed to work with regard to learning and when/how should it be used? Cite research examples in support of your points. (6 marks)**

Mental practice involves rehearsal of a motor skill, but does not involve physical practice. According to Heuer, mental practice helps performers to learn what to do, in terms of cognitive aspects – mental practice is more helpful early in learning. In order to use mental practice, there needs to be some type of systematic procedure involved.

**26. Explain in detail how variable practice is believed to relate to schema theory. Use research data to support your points. (6 marks)**

Variable practice: using a number of different outcomes in practice (like practicing throwing a variety of distances). During a transfer task variable > constant, this type of practice makes it easier for people to generalize from movement to another. Catalano and Kleiner demonstrated constant practice vs. variable practice. Variable practice groups had lower error rates than constant practice group

**27. Briefly present the differences between inherent feedback and augmented feedback. (4 marks)**

Inherent feedback: as we move, we receive information from our joints, our eyes, our ears, our hands, etc. This feedback is intrinsic or inherent – it comes automatically. Augmented feedback: augmented feedback is extra feedback, usually provided by a person or device. It is

external to the performer it is usually under control of an instructor/coach – therefore it can be controlled

### **SUMBER SOAL DARI BUKU MAAGILL**

1. Discuss how the terms actions and movements are related to motor skills. Give an example than illustrate this relationship!
2. Describe the differences between performance outcome measures and performance production measures and give three examples for each of these measures of motor performance!
3. how is balance an example of motor ability that includes at least two types of relatively independent variations?
4. describe a motor unit and its function in the control of voluntary movement. Discuss how the motor unit is involved in the generation of muscular force!
5. describe an example of nonlinear changes in human coordinated movement!
6. describe the spatial and temporal relationships between your eyes and hand when you move the computer mouse so that the cursor point to an icon in the monitor!
7. discuss why the performance of a skill requiring asymmetric bimanual coordination is difficult when it is first attempted
8. select a motor skill and describe how motor control features of that skill that a person prepares prior to the initiation of performance of the skill.
9. discuss whether a person should focus attention oh his or her own movements or on the movement or on the movement effect, give an example!
10. what is the encoding specifications principle, and how does it relate to the performance of motor skills?
11. what is an advantage of using transfer tests in making a valid assesment of learning? Give an example of a real-world situation that illustrates this advantage!
12. describe four performer or performance changes that occur as a person progresses through the stages of learning a motor skill!
13. discuss two reason why transfer of learning in an important concept in our understanding of motor learning and control!
14. what are the main features of two predominant theories about why observing a demonstration helps a person to learn a skill? How do these theories differ?

15. describe a situation in which you would use kinematic information as augmented feedback to help someone learn a motor skill and explain why you would use it!
16. what is meant by term practice variability and why is it important for skill learning?
17. describe how the concept of practice distribution is related to the intertrial interval and to the length and distribution of practice sessions. Describe a motor skill learning situation for each!
18. how can you decide whether people would learn a skill best if they practiced it as a whole or in parts? And give a motor skill example to show how to apply these rules.
19. describe an example of how you would implement mental practice procedures to aid the learning of a new skill!