AMOUNT & PRACTICE DISTRIBUTION
Overlearning and Learning Motor Skills

- The amount of practice a person devotes to a skill is important in learning a motor skill.
- More practice is assumed to be better than less practice.
- Achieving a specific performance standard in a school setting or therapy session is usually associated with a specific time period of practice.
- Efficiency of practice become the focus when achieving optimal learning.
OVERLEARNING

- Overlearning is the continuation of practice beyond the amount needed to achieve a certain performance criterion.
TYPES OF SKILLS AND OVERLEARNING

- Procedural skills
- Dynamic Balance Skills
- Overlearning Strategy in Physical Education
OVERLEARNING STRATEGY FOR LEARNING PROCEDURAL SKILLS

- A procedural skill requires a person to perform a series of discrete movements in a known order, such as a dance routine.
  - Overlearning of a procedural skill decreases the amount of forgetting about the procedure.
Retraining of a Procedural Skill

- You learned the dance but have not practiced it for a while. You have forget several moves. How should we train you?

- A study found that immediate overtraining practice to relearn a skill was better strategy than spacing overtraining through out practice.
OVERLEARNING STRATEGY & BALANCE SKILLS

- There has been only one study (Melnick, 1971) involving dynamic balance skill and overlearning.
  - Balancing on a stabilometer
  - Criterion 28 out of 50 seconds
  - 0, 50, & 100% overlearning conditions
- Extra practice was beneficial
- But there appeared a point of “diminishing returns” in performance benefits.
- Retention benefits past this point are not proportional to additional practice
OVERLEARNING STRATEGY IN A PHYSICAL EDUCATION CLASS.

- Demonstrated the presence of “diminished returns” for increasing learning of a two-step football punt (Goldberger & Gerney, 1990).
  - Teacher divided the class into five groups and assigned to a station where they practiced for 5 minutes
  - At end of 5 minutes rotated to another station
  - Another group practiced 25 minutes using task cards that described skill learned at each station
- Results showed rotated groups practiced more, no difference in practice but in retention test was superior.
  - Station to station approach is very effective.
WHY would more practice lead to poorer retention & Transfer?

- Learners cease to engage in cognitive effort
- Learner ceases to engage in practice variability
- The point is learning beyond the point of criterion need to engage in these factors.
OVERLEARNING AND OTHER PRACTICE VARIABLES

- The amount of practice is not the sole critical variable influencing motor skill acquisition
  - “Practice does not make perfect; perfect practice makes prefect.”
- Amount of practice interacts with other variables to influence learning, such as:
  - Type and frequency of feedback, and
  - Variability of practice
IMPLICATIONS

- The overlearning strategy works when the professional knows how much practice is needed to achieve a performance standard.
- Overlearning is effective for learning skills that a learner will practice during a specified period.
- There is a point of diminishing returns in the amount of practice.
- Overlearning strategy needs to accompany other variables that influence learning such as feedback, practice variability.
PRACTICE DISTRIBUTION

- Spacing of practice

- Relative Rest to Work Ratio in and across practice.
DEFINING MASS AND DISTRIBUTIVE PRACTICE

- Mass practice schedule is the amount of rest between practice sessions or trials is very short or none at all.

- Distributive practice schedule is the amount of rest between practice sessions or trials are relatively long.
LENGTH OF PRACTICE SESSIONS

- A prime concern is how to use an allotted amount of time within and between practice sessions.
- A teacher/PT may have only 9 days of classes/sessions to teach/develop several skills.
- Is it better to have longer (mass) practices then shorter (distributive) more frequent practices?
Which one type of practice is better?

Baddeley and Longman’s typing study
All trainees received 60 hours of training
5 days per week
Researchers used mass practice and distributed schedules that varied the lengths and frequency of the training sessions.
CONCLUSIONS OF BADDELY AND LONGMEN’S STUDY

Amount of time:
Keep practice session short and only practice once a day led to better learning.

Speed of Typing
People learn skills better in large number of shorter sessions of practice than in sessions that are long and fewer in number.

Trainees preferred mass over distributive practice in learning the skill which is exactly opposite of the results
Replication of Results

- Annett & Piech found that two 5 trial training sessions separated by one day was better than one ten trial session in shooting.
- Bouzid & Carwshaw found that shorter sessions where better than one 60 min sessions in learning work processing skills.
- Dail & Christina found that learning to putt in golf that short more frequent sessions were better than mass practice.
- Shea et al found that distributing practice sessions across a day resulted in better learning than massing for dynamic balance task.
Explanation for results?

Why the distributed practice sessions across more days lead to better learning:

1. Less levels of fatigue both mentally and physically.
2. Mass learning required less cognitive effort because of repetition becoming monotonous or boring.
3. Memory consolidation hypothesis, that is, to store in memory relevant information one requires a certain amount of time without additional practice to transfer the information to permanent memory.
PRACTICE DISTRIBUTION RESEARCH

- Length of intertrial interval (period between the next trial or rest between trial) has been extensively researched.
  - Mass practice work is greater than rest
  - Distributed practice rest is equal or greater than work

- Two meta-analysis reviews indicated that the type of task was an important variable in resolving the question of what type of practice was better.
  - Donovan & Radosевич (1992)
  - Lee & Genovese (1988)
**PRACTICE SCHEDULES AND CONTINUOUS SKILLS**

- Most common type of skill researched was the rotary pursuit
- Lee and Genovese found consist results that indicated distributed schedules lead to better learning than massed schedule.
- Why?
PRACTICE SCHEDULES AND DISCRETE SKILLS

- Lee and Genovese have found that massed practice schedules results in better learning for discrete skills.

- Why???
IMPLICATIONS

- Practice sessions can be too long; opt for shorter practices.
- Time saved by having massed practice session produce false savings.
- More frequent practices are preferable.
- Mass sessions too close together can lead to poorer long term results.
- Continuous skills use distributive while discrete skills use mass.
- Length and number of sessions desired by performers may not be the best practice schedule.