Motor Ability

Chapter 3
The Terms Ability and Motor Ability

**Ability**
- A general *trait or capacity* of a person
- Relatively enduring characteristic
- Serves as a determinant of a person’s *achievement potential* for the performance of specific skills

**Motor Ability**
- An ability that is specifically related to the performance of a motor skill
- Each person has a variety of motor abilities
Abilities as Individual Difference Variables

- Motor abilities establish achievement potentials for specific motor skills
- Each motor skill requires specific motor abilities to successfully perform it

If 2 people have the same
  - Amount of practice
  - Level and amount of instruction
  - Motivation to perform the skill

Then - Motor abilities will influence the level of performance success each person can/will achieve
Abilities as Individual Difference Variables, cont’d

Two hypotheses:

- **General Motor Ability Hypothesis:** many different motor abilities that exist are highly related within a person and can be grouped as a singular, global motor ability (Brace, 1927; McCloy, 1934)

- **Specificity of Motor Ability Hypothesis:** many motor abilities are relatively independent in an individual (Henry, 1961)
Controversy About Relationship Among Motor Abilities

General Motor Ability Hypothesis
• All motor abilities are highly related to each other
• A person can be described as having an overall amount of general motor ability

Specificity of Motor Abilities Hypothesis
• All motor abilities are relatively independent
• Each person varies in the amount of each ability
• A person’s motor ability can be described only by a profile of amounts of each of several specific motor abilities
Inclass Discussion

• The babe: Can a general motor ability be defined and measured?

  – With another member of the class summarize what are the important points of this case!
Questions

• What is the general motor ability assumption?

• What is the specificity of individual difference view?

• What does the all around athlete term mean?
Discussion Topic

In a recent movie staring Brad Pitt called “Moneyball”, the movie highlights the effort about Billie Beam and how he was able to run Oakland A’s on limited budget win the divisional championship.
Application: Major league baseball scouts

- Prior to 2000 many players were drafted on:
  - how fast they can run the 50 yard dash
  - velocity in throwing
  - Hitting
  - Drafting players out of HS was common place
- Since 2000 many players are drafted based on:
  - On base percentage
  - Ability to hit with players on base
  - Slugging %
  - Number of run scored
  - Hitting deep in the count versus first ball hitters
  - If they played college ball
  - Number hits not homeruns
Billy Ball

• Is Billy Ball a general motor ability or specificity approach?

• What affect has Billy Ball approach had on major league baseball?
• Pick a sport of your choice. How would you determine what athletes would be starter or nonstarters using the general motor ability & specificity of individual difference views? In your opinion which method would be the best! Why?
Research Evidence Supports Specificity Hypothesis

Research technique to test the question of which hypothesis valid:

- Correlate any two motor abilities
  - Each hypothesis predicts different correlation result – What are these different results?
- Initial research compared RT and MT
  - Henry and colleagues (1960s) showed low correlations
  - See example in “A Closer Look” p. 40
Generality of Specific Abilities

Recent research has investigated whether variations of a motor ability commonly seen as “specific” actually represents one ability.

Two examples

1. Balance (also known as “postural stability”) as a motor ability

Two types:

- Static
- Dynamic
Static vs. Dynamic Balance

Two Research Examples

Rose et al. (2002) – Children with CP showed balance problems while walking but not while standing

Drowatzky & Zuccato (1967) – Correlations among various tests of static and dynamic balance typically ranged from .03 to .26 [See Table 3.1]

Conclusions - Static and dynamic balance are distinct, independent abilities. As a motor ability, balance must be viewed as a multi-dimensional ability.
2. Timing as a Motor Ability

• **External vs. Internal Timing**
  – **External** - Movement timing based on external source (externally-paced timing)
  – **Internal** - Timing of movement based on person’s internal representation of time (self-paced timing)

• **Conclusion:** Research evidence indicates distinct timing abilities are skill specific rather than related to a general timing ability
  – See experiments described in textbook
Identifying Motor Abilities

One example of an attempt to identify motor abilities

Fleishman’s Taxonomy of Motor Abilities

– Described 11 perceptual-motor abilities
– See Table 3.2 for complete list and definitions
– People differ in amount of each ability
Summary

• Ability

• General motor ability versus specificity approach