



PSIA - Rocky Mountain Division – AASI Alpine Technical Foundations Workbook



I. Skiing Skills & Movements

A. History of Skiing Models

1. National Techniques

a. French, Austrian, etc.

b. American Ski Technique

i. Seven Basic Principles

(a) Natural Positioning

(b) Total Motion

(c) Unweighting

(d) Axial Motion

(e) Edge Control

(f) Weight Transfer

(g) Leverage

ii. Ten Final Forms

(a) Straight Running

(b) Straight Snowplow

(c) Snowplow Turn

(d) Traverse

(e) Stem Turn

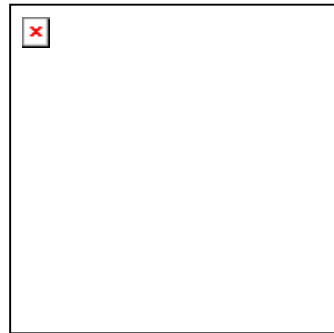
(f) Sideslip

(g) Uphill Christie

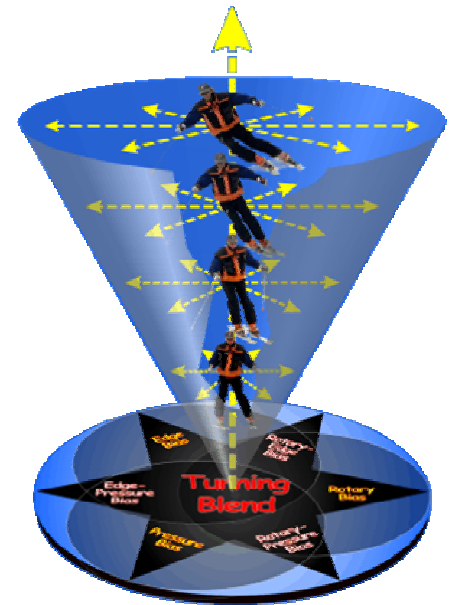
(h) Stem Christie

(i) Parallel Turns

(j) Wedeln



Skills Concept™



Center Line™ "Cone of Learning"

2. PSIA—The Skills Concept™

a. Overview

i. Humanistic vs. mechanistic

ii. Outcome-based vs. process-based

iii. Student-driven vs. technique-driven

b. Stance & Balance and 3 Basic Skills

3. A map to navigate the Skills PSIA—Center Line Model™

a. Concept™

b. Lateral & Linear Learning

c. The "Cone of Learning"

d. Milestones of skill development (linear learning)

e. "Common Threads" & "Teaching for Transfer"

f. "We don't teach beginners' turns—we introduce beginners to the skiing of experts."

4. PSIA—Stepping Stones Model™

5. PSIA-Rocky Mountain—Guest-Centered Teaching™ Model

a. Two instructor activities

b. Three categories of student (guest) needs



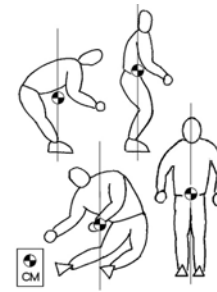
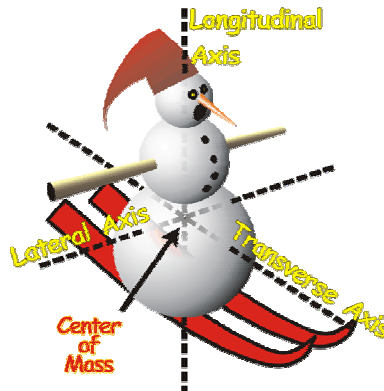
Stepping Stones™ Model

PSIA-ROCKY MOUNTAIN • GCT™ LESSON PLANNING WORKSHEET			
STUDENT PROFILE:			
Name:			
Age:			
Physical Attributes/Injury:			
Equipment:			
Background:			
Skiing Experience:			

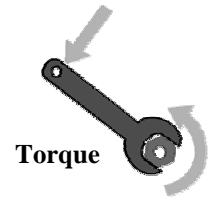
Guest-Centered Teaching™ Model

B. Basic Mechanics (Physics)

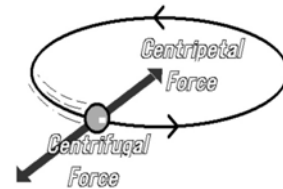
1. Mass
2. Center of Mass
3. Linear & Angular Motion
4. Momentum
5. Velocity
6. Acceleration
7. Force
8. Centripetal & Centrifugal Force
9. Torque
10. Newton's Laws of Motion
 - a. First Law: An object in motion will remain in constant, undisturbed motion unless acted on by an external, unbalanced force.
 - b. Second Law: Any change in motion will occur in the direction of the force applied, and will be proportional to the size of the force.
 - c. Third Law: Every action must have an equal and opposite reaction; every force a counter-force.
11. Forces in Ski Turns



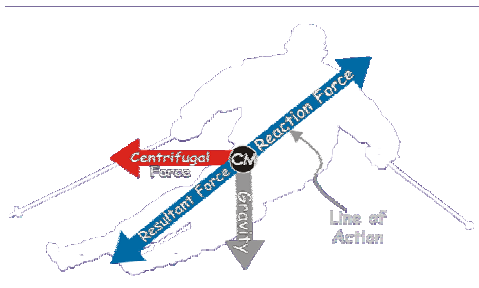
CM is mobile



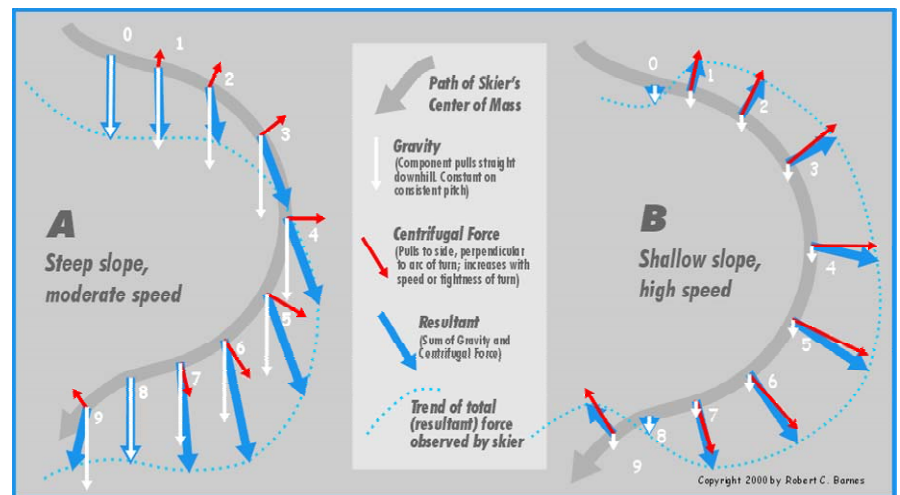
Torque



Centripetal & Centrifugal Forces



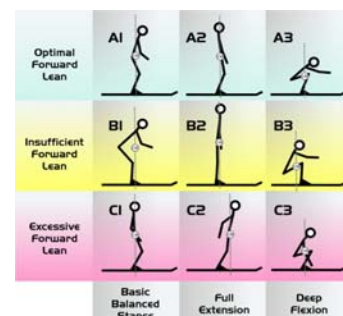
Forces from skier's frame of reference



Forces in ski turns

C. Fundamental Skills & Movements

1. Stance
 - a. Principles and Characteristics of Basic Stance
 - b. Stance, Balance, & Leverage
 - c. "Neutral"—What does it mean?
 - i. Principles of Neutral
 - ii. Characteristics of Neutral
2. Rotary Skill



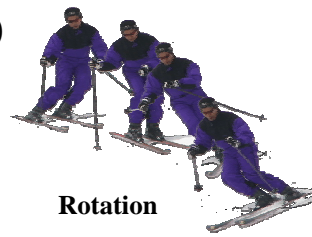
Effects of forward lean



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- a. Basic Rotary Mechanisms (principles)
 - i. "Rotation"
 - ii. "Counter-Rotation"
 - iii. "Blocking Pole Plant"
 - iv. "Independent Leg Rotation"
- b. More Rotary terms and concepts
 - i. Anticipation-Release
 - ii. Rotary Pushoff
 - iii. Braquage
 - iv. Fulcrum Mechanism
 - v. Platform
 - vi. Combination rotary mechanisms
 - vii. Effects on alignment & stance



Rotation



Counter-Rotation



Blocking Pole Plant



Leg Rotation

3. Edging Skill

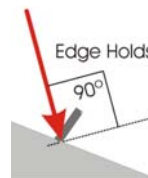
- a. Purposes
 - i. Gripping/Carving/Shaping for *Direction Control*
 - ii. Skidding/Scraping/Braking for *Speed Control*
- b. Inclination, Angulation, and Banking
- c. Kinetic Chain
- d. Ski Design—what makes a ski carve?
- e. "Critical Edge Angle"



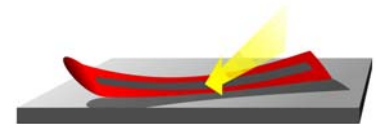
Inclination



Angulation



Critical Edge Angle



Carving!

4. Pressure Control Skill

- a. Fore-Aft movements
- b. Side-to-side (lateral) movements
- c. "Vertical" (long-short) movements
- d. Bumps and "virtual bumps"

D. Describing movements

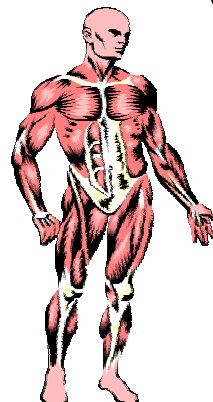
1. Type
 - a. Principles (i.e. Rotary mechanisms)
 - b. Body parts and joints involved
2. D-I-R-T (Duration, Intensity, Rate, Timing)
3. Origin and cause
4. Effects



Vertical & Fore-Aft Movements in bumps

E. Anatomy & Equipment Setup

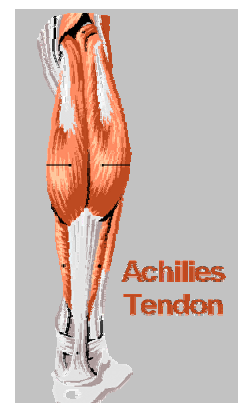
1. Anatomy
 - a. Muscles
 - b. Bones
 - c. Joints
 - d. Ligaments, Tendons, Cartilage
2. Motion & Biomechanics
 - a. General
 - i. Adduction & Abduction
 - ii. Flexion & Extension



Hinge Joint



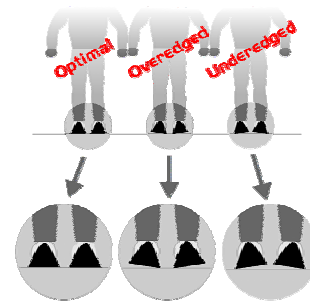
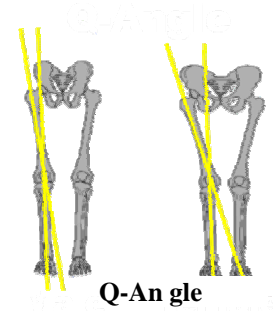
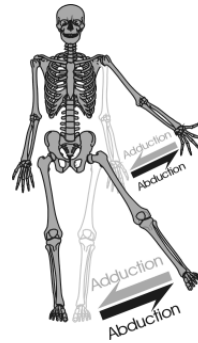
Ball & Socket Joint



Achilles Tendon

- iii. Rotation—internal & external
- iv. Inversion & Eversion
- v. Dorsiflexion & Plantar flexion
- vi. Pronation & Supination
- vii. Anatomical Reference Planes
- viii. Q-angle, Male & Female morphology

- b. Foot & Ankle
- c. Knee
- d. Hip
- 3. Equipment setup
 - a. Boots
 - i. Footbeds
 - ii. Fore-aft
 - iii. Canting needs—Underedged & Overedged
 - b. Skis
 - i. Type, construction, size
 - ii. Condition and tuning



II. Assessing Movement Needs

- A. Cause & Effect
 - 1. Equipment
 - 2. Anatomy & Fitness
 - 3. Motivation
 - 4. Intent
 - a. Intent Dictates Technique
 - b. Offensive & Defensive Intent—Why do you turn?
 - c. Spectrum of Intents—Carving-Turning-Braking
 - d. The Slow Line Fast!
 - 5. Understanding & Misunderstanding
 - 6. Technical Cause & Effect
 - a. Skill pool interaction (stance, rotary, edging, pressure control)
 - b. Turn Phases—prior movements affect future movements
 - c. Movement packages & Skier types
- B. Prescribing Change
 - 1. Work on causes, not effects
 - 2. "FIT" & "SMIM" (First Important Thing or Single Most Important Movements)
 - 3. Goal Statement

III. The Movement Analysis Model

- A. Describe—Assess—Prescribe—Facilitate
- B. Guest-Centered Teaching™ & the M.A. Model

