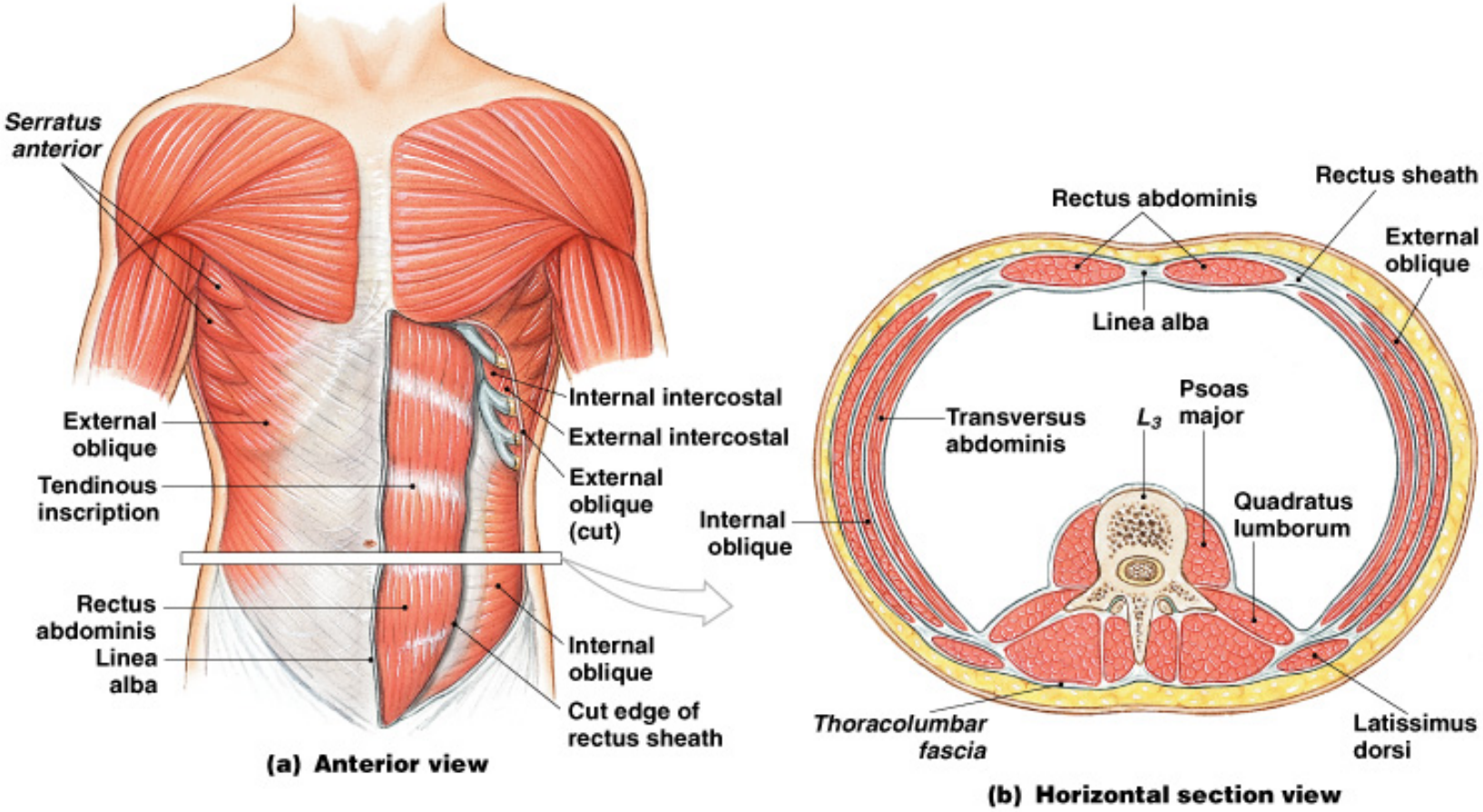
Core Stabilization Exercises

Core Stabilization

- Provides the foundation upon which all other aspects of integrated training are based
- The *Core* integrates the shoulders, trunk, and hips
- A <u>suitably</u> strong and responsive core allows for what?
- Importance of progression; static → dynamic

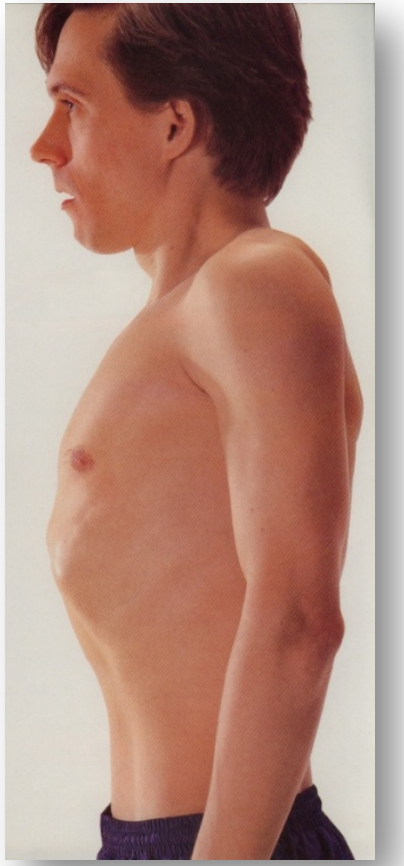
Synergy Between Abdominal & Back Muscles



(a) Anterior view

(b) Horizontal section view

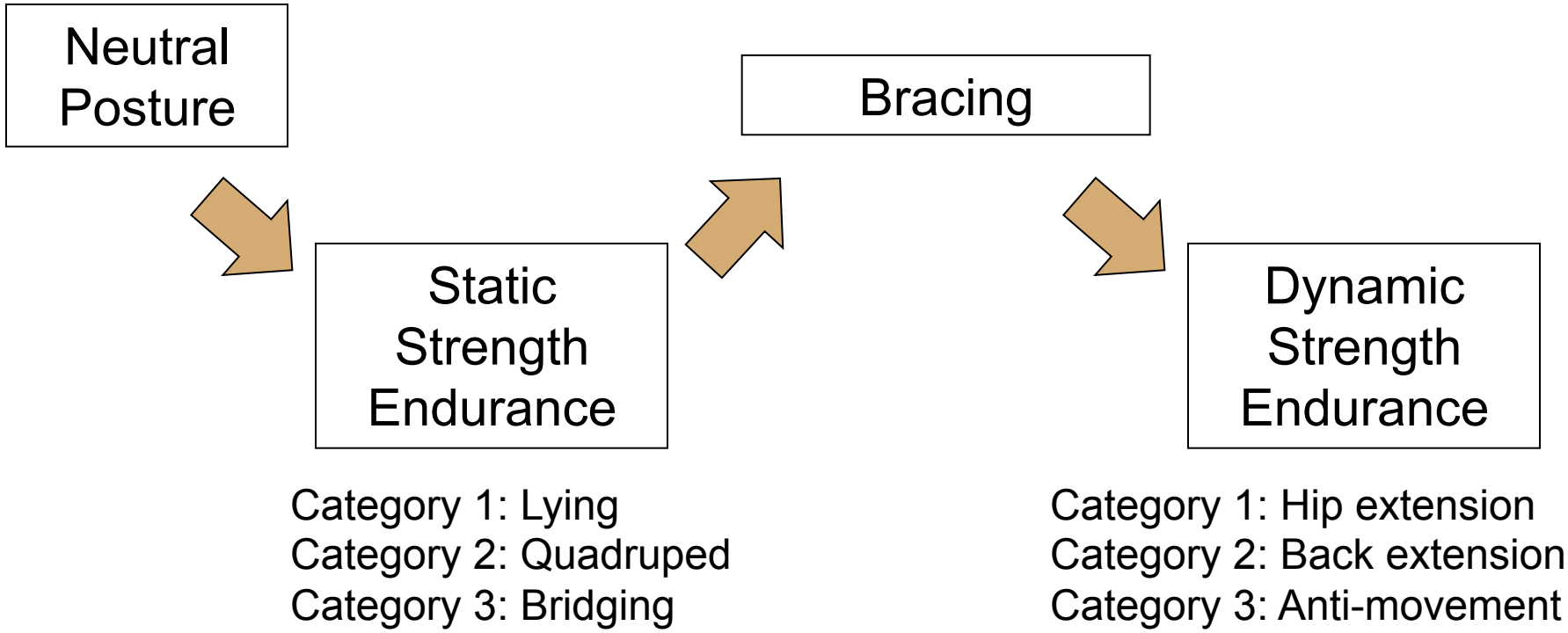
Engaging the Core - 2 techniques



- Principle maneuver, “Drawn-in” position

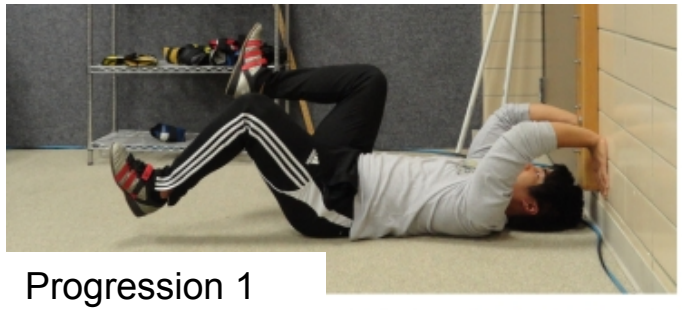
- Exercises:
  - Vacuum: Stand tall, Take a deep breath, exhale and suck the abdomen up and in as far as possible, hold for 5-10 seconds, then inhale and relax
  - Stabilization exercises should place minimal load on the spine
    - Focus on static position
    - Progression: lying (supine and prone), quadruped and bridging exercises

Core Activation Training Progression



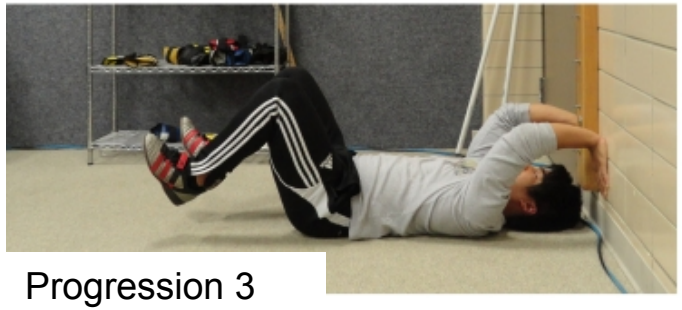
Category 1: Lying Supine

- Floor is used as a guide to maintain spinal alignment
- Technique:
  - Hands press lightly against wall
  - Note progression 1 to 4
- Each position repeated 3 x ~15-20s

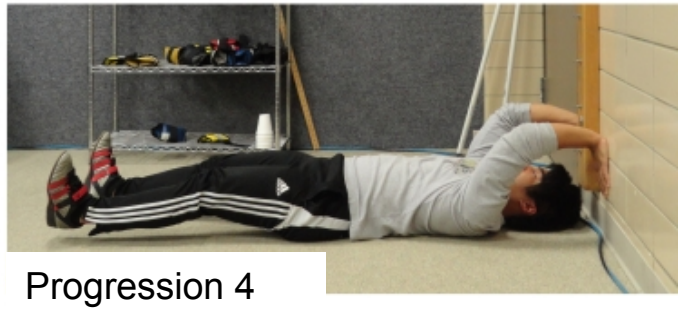


Progression 1

Progression 2



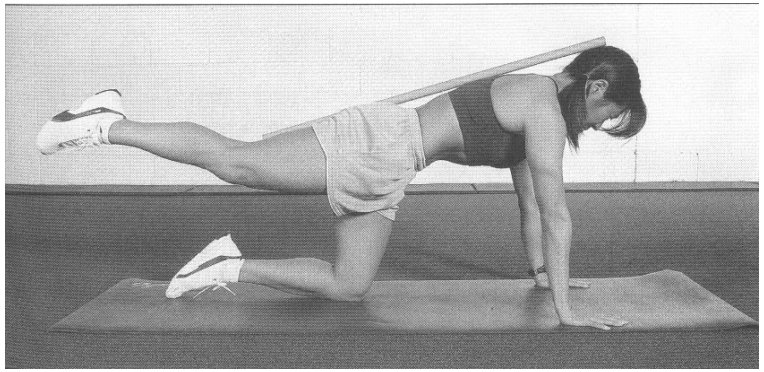
Progression 3

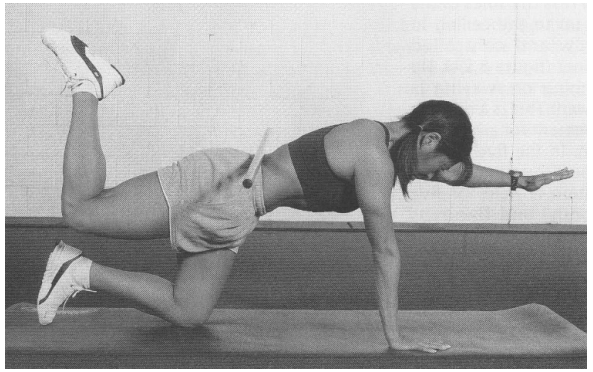


Progression 4

Category 2: Quadruped Position

- A dowel is a useful tool to emphasize proper alignment
- Technique:
  - Hip and shoulder 90º position
  - Movement progression:
    - Lift one arm → leg → opposite arm and leg → superman position



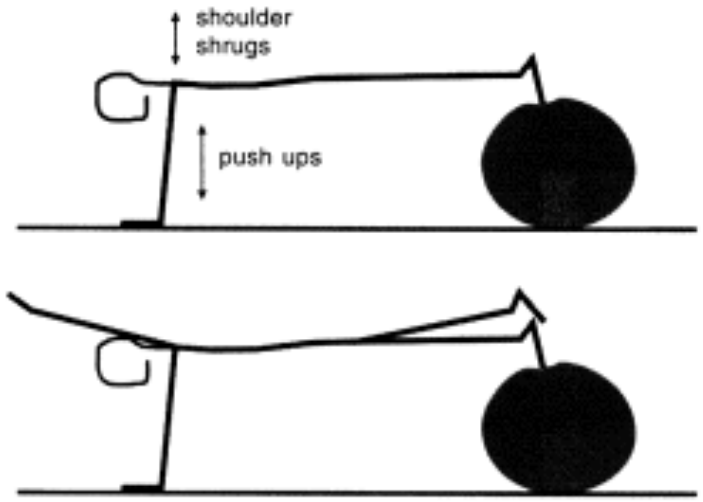


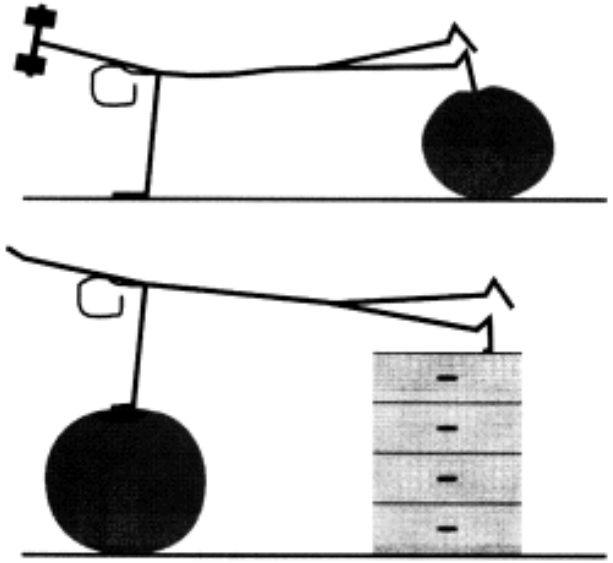
Category 3: Bridging - Prone

- a.k.a: plank and hover
- Goal is to maintain proper posture at all times – do not look up/ahead, keep head in alignment with spine
- Progression:
  - Pushup position, elbows, 1-leg, 1-arm, 1-leg & 1-arm
  - Can include wobble boards, bosu balls, foam or air pads, and stability ball under the hands/elbows and/or feet

Category 3: Bridging - Prone

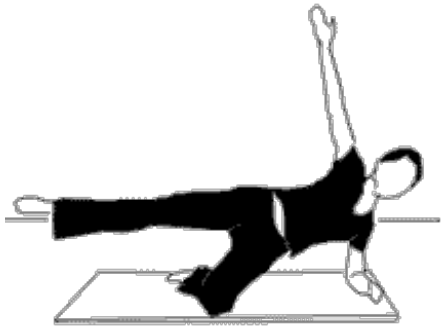
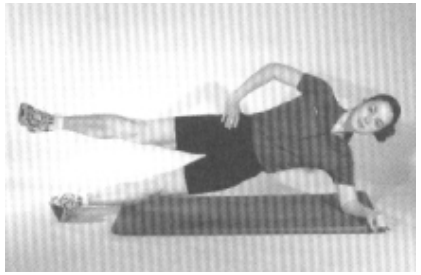
- The greater the stress on the extremities the greater the core stabilization requirements.
  - Must switch to *Bracing* maneuver





Category 3: Bridging - Lateral

- Don’t forget posture!
- Progression:
  - Knees bent, legs straight, bottom-single leg, bottom-single leg position to the front or back of the body, top-single leg
  - Foam/air pads, bosu, small stability ball can be placed underneath the elbow and/or feet.

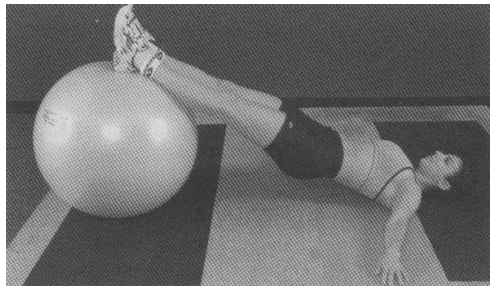



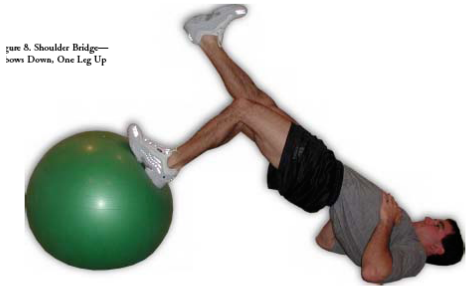
Category 3: Bridging - Supine

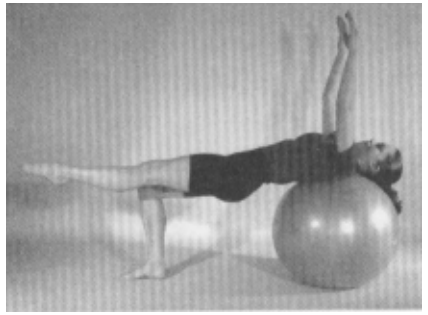
- Although the posterior chain musculature will be highly activated, firm abdominal pressure should be maintained
  - Press down with the arms to activate the latissimus m.
- Progression:
  - Knees bent, lift one leg off the floor, fully extend one leg horizontal or vertical, bend elbows

Category 3: Bridging - Supine

- Further Progression:
  - Make use of foam/air pads, bosu, stability ball placed underneath the shoulders and/or feet.







Training Progression

Neutral Posture → Static Strength Endurance → Bracing → Dynamic Strength Endurance

Bracing maneuver focuses on ‘stiffening’ the trunk

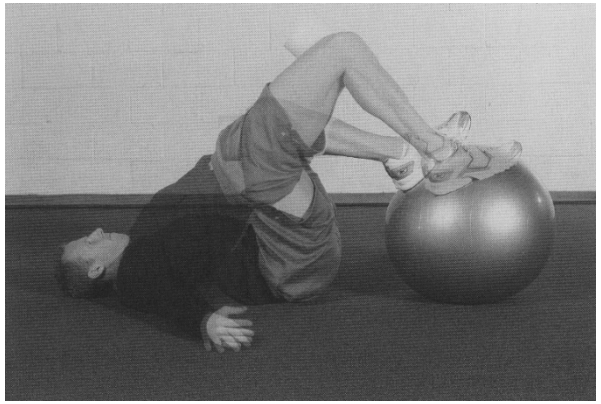
Category 1: Hip extension

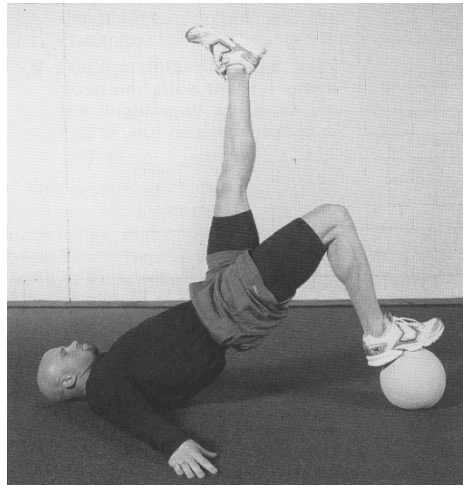
Category 2: Back extension

Category 3: Anti-Movement

Category 1: Hip Extension

- Hip extension has the upper body fixed and the lower free to move
- Technique:
  - Foot should be dorsiflexed to encourage glute max and abdominal activation
  - If possible, foot slightly supinated to encourage external thigh rotation
- Progression: begin without external resistance
  - 2-legs & 1-leg variation



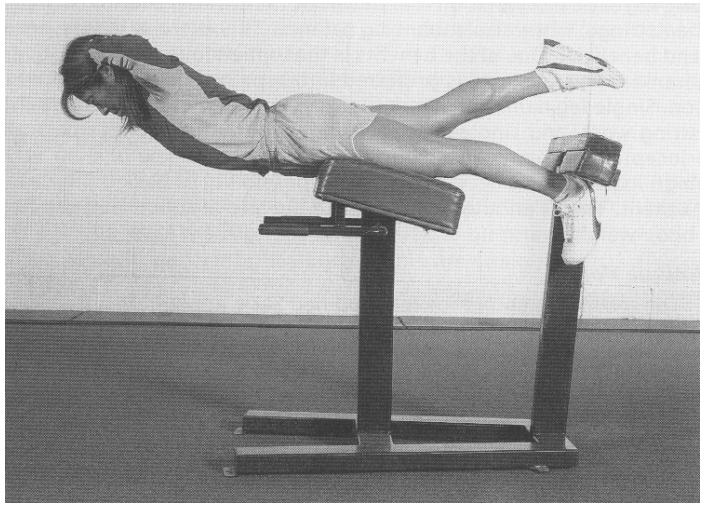


Hips should be slightly beyond edge of padding

"Thrusters"

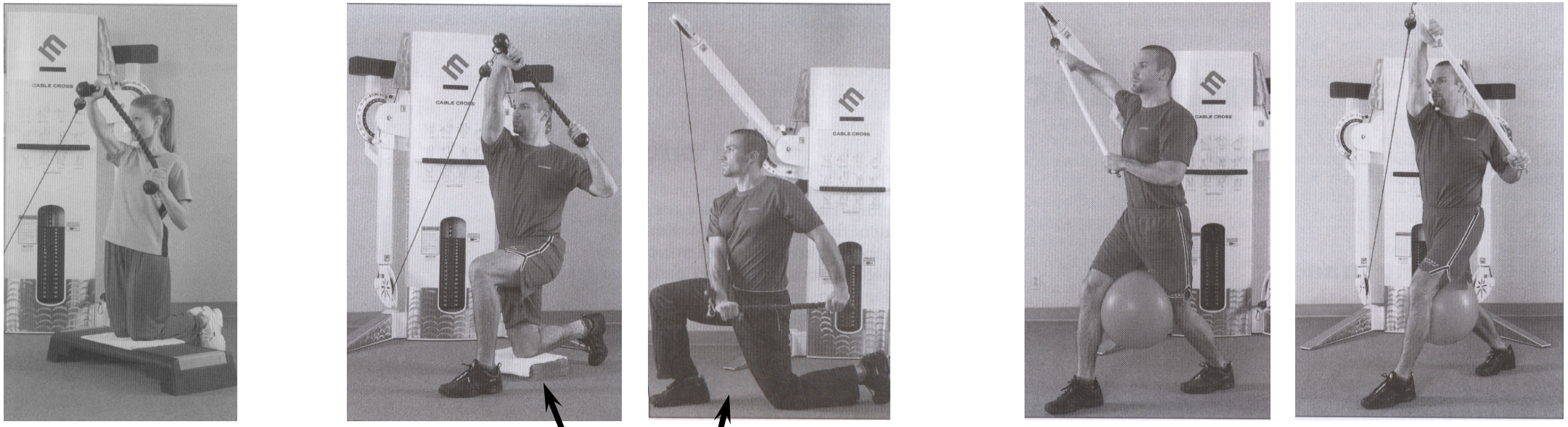
Category 2: Back Extension

- Back extension has the lower body fixed and the upper free to move
- Technique
  - Hip joint placement is very important, should be slightly beyond edge of padding
- Progression: 2 leg → 1 leg



Category 3: Anti-Movement (Resist Rotation of UB)

- Cable Chops
  - Note: no head movement
  - Goal is to get to or slightly cross midline w/ hand closest to stack
  - Performed on: 2-knees (tall knelling), 1-knee (half knelling), standing
    - mvt: down diagonally, horizontal across, up diagonally



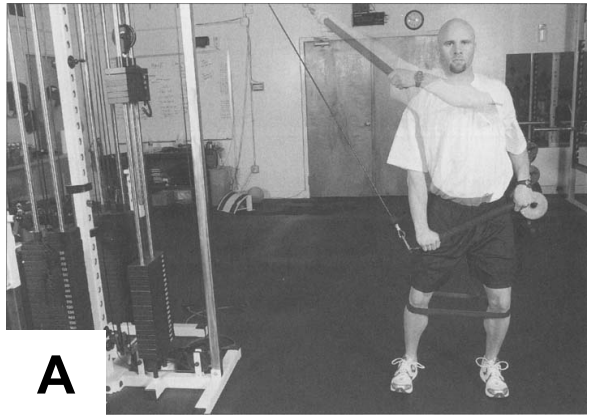
Narrow stance

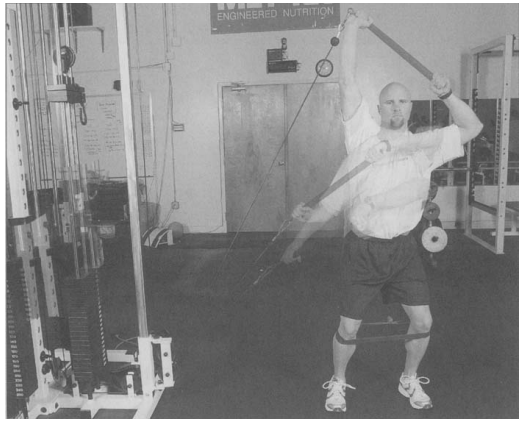
Category 3: Anti-Movement (Resist Rotation of UB)

A. Lateral downward chops
   - Arm closest to cable stack move down/up to vertical position

B. Stationary position
   - “Anti-rotation”

C. Walkouts
   - Cable held overhead, walk/shuffle in the:
     - Frontal plane
     - Sagittal plane
     - Transverse plane





Category 3: Anti-Movement (Resist Rotation of UB)

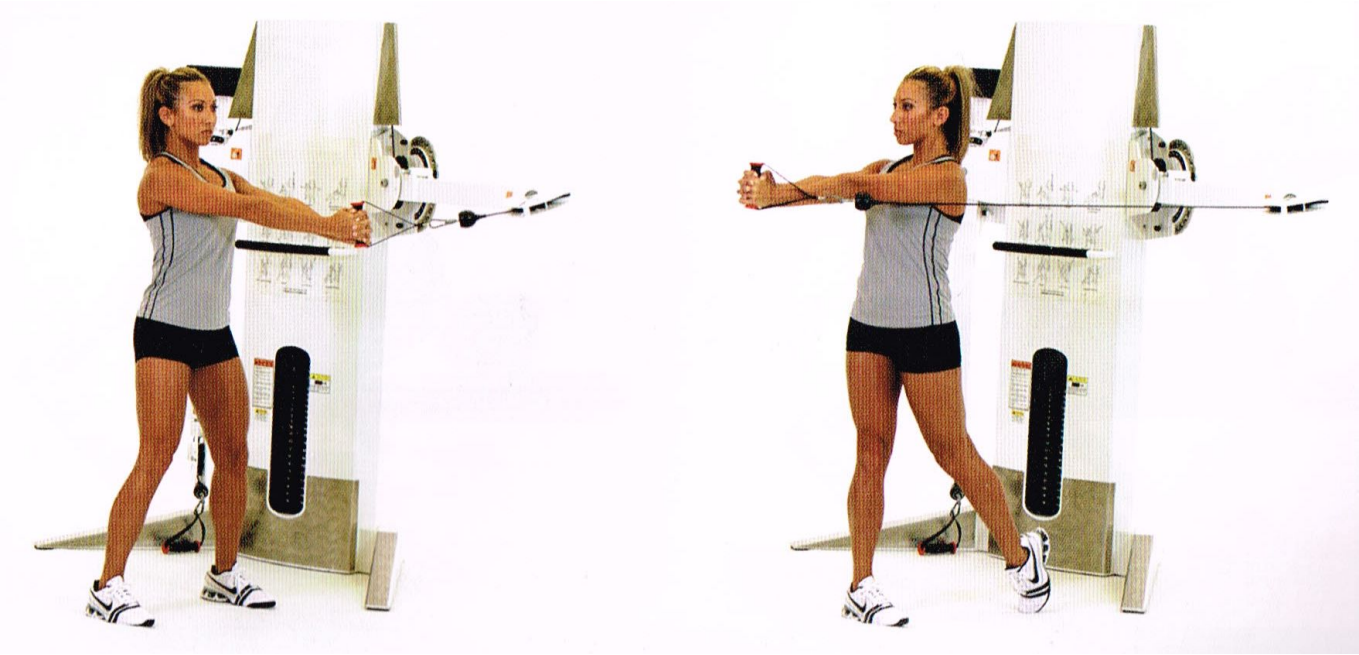
- Multi-planer movement
  - Stuart McGill's 'stir-the-pot'

Category 3: Rotational Movements

- Torso normally remains rigid during rotation
  - Shoulders and pelvis maintain parallel alignment
- Movement primarily comes from the HIPS
  - Hips need to be mobile to protect the lower back

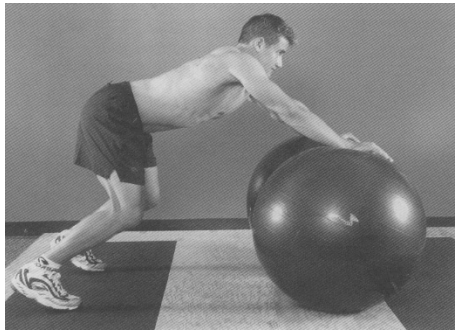
Category 3: Anti-Movement (Functional Movement)

- Cable exercises performed in a standing position, vary chopping angles:
  - Downward chops
  - Horizontal chips
  - Upward chops

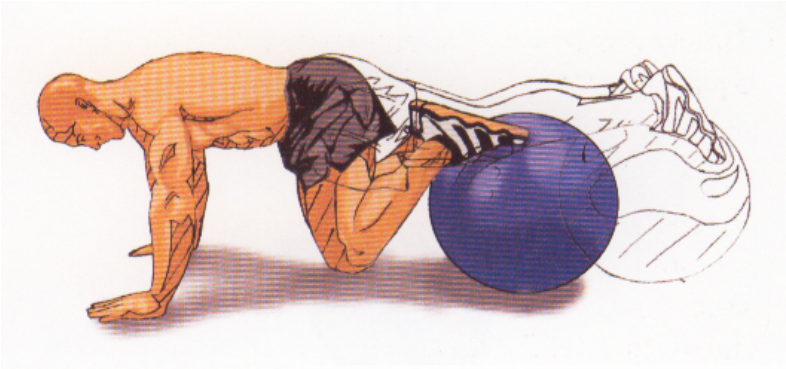


Category 3: Anti-Movement (Resist Extension)

- Roll-outs with upper body
  - Progress from knees to feet to standing
  - Toes should remain in contact with the ground



Tools:
- Stability ball
- Barbell
- ‘Ab’ wheel

Category 3: Anti-Movement (Resist Extension)

- Roll-outs with lower body
  - Progress from jackknife to pike position