

Program design

- ✓ **AID principle:** Specific Adaptation to Imposed Demands
- ✓ **Progressive overload:** ↑ Weight, volume, complexity
- ✓ **Periodization types:**
 - ✓ Linear: ↑ Intensity, ↓ Volume
 - ✓ Undulating: Changes week-to-week or session-to-session
- ✓ **Rest periods:**
 - ✓ Power: 2–5 min
 - ✓ Strength: 2–5 min
 - ✓ Hypertrophy: 30–90 sec
 - ✓ Endurance: <30 sec

Plyometrics

- ✓ **SC (Stretch-shortening cycle):** Eccentric → Amortization → Concentric
- ✓ **Safety:** Depth jump ≤ 42 inches, surface should absorb shock
- ✓ Volume based on experience (80–100 beginner, 100–120 intermediate)

Macronutrients

- ✓ **Protein:** 1.4–2.0 g/kg/day (higher for strength)
- ✓ **Carbs:** 5–10 g/kg/day (higher for endurance)
- ✓ **Fat:** ~ 20–35% total calories

Older adults

- ✓ Focus on technique and progressive overload
- ✓ 1–3 sets, 8–12 reps, 2–3x/week

Hydration

- ✓ 1 lb lost = 16 oz fluid replacement
- ✓ **Pre-exercise:** 16 oz 2–3 hrs before
- ✓ Electrolyte replacement essential for long duration activity

Supplements

- ✓ **Creatine:** ↑ ATP-PC system, 5g/day
- ✓ **Caffeine:** 3–6 mg/kg, ↑ alertness & endurance
- ✓ **Beta-alanine:** ↓ Fatigue, ↑ buffering

Youth

- ✓ Emphasize technique over load
- ✓ Growth cartilage = avoid max loading
- ✓ 1–3 sets of 6–15 reps, 2–3x/week

Female athletes

- ✓ **ACL injury prevention:** Land mechanics, quad:ham ratio
- ✓ Strength differences mostly due to muscle mass

Risk management

- ✓ Emergency Action Plan (EAP) = REQUIRED
- ✓ **Spotters:** Required for bar over head/face/back
- ✓ **Facility design:** ≥49 sq ft per athlete, mirrors 6' above floor