

Resistance Training for Optimal Power, Strength, Hypertrophy and Endurance

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Learning objectives: Following this lecture, attendees will be able to:

- distinguish between intensities (%1RM/RM-zone) for the different resistance training goals
- establish the appropriate volume (sets X repetitions) based on resistance training goal
- optimize exercise sequence in a single resistance training session
- determine when to progress resistance training variables
- select the best resistance training routine based on training status of the client

Four (4) Major ‘Takeaways’: Trainers should 1) perform a “needs analysis” prior to creating a resistance training program, 2) implement optimal resistance training design based on training “age” and goal, 3) sequence exercises based on priority, and 4) determine proper modifications/progressions for foundational exercises.

The Background

- I. Benefits of Resistance Training (RT) for General Pop.
 - a. Activities of Daily Living
 - b. Range of Motion
 - c. Prevention of Chronic Disease
- II. Requirements for Athletic Performance
 - a. Injury prevention
 - b. Muscle balance
 - c. Association to Sport
- III. Benefits of RT for Older Adults
 - a. Maintain muscular fitness
 - b. Improve mobility
 - c. Maintain independence—decrease fall risk
 - d. Maintain LBM and bone mass
 - e. Improve self-efficacy

The Development

- IV. Principles of Prescription
 - a. Assessment of client
 - i. RT status
 - ii. Experience
 - iii. RT Goal
 - b. Exercise selection
 - i. Structural
 - ii. Power
 - iii. Muscle Balance

- iv. Restorative
- c. Program Design
 - i. Muscular endurance
 - ii. Muscular hypertrophy
 - iii. Muscular strength
 - iv. Muscular power
 - v. Training frequency
 - vi. Exercise Sequence

Resistance Training Tools & Programs

Basic RT Toolkit

Area of focus	Hip dominant	Knee dominant	Horizontal Push	Horizontal Pull	Vertical Push	Vertical Pull
Movement	Dead lift	Squat	Bench Press	Bent-over Row	Shoulder Press	Lat Pull-down
Modification	Hip bridge	Leg Press	Chest Press	Seated row	Wall slides	Modified cobra
Primary muscle group(s)	Gluteals / hamstrings	Gluteals / Quadriceps	Pectoralis major / anterior deltoid / triceps	Trapezius / posterior deltoid / biceps	Deltoids / Upper trapezius / triceps	Latissimus dorsi / lower trapezius / biceps

Program distinctions

Goal of program	Muscular endurance	Muscular hypertrophy	Muscular strength	Muscular power
Volume	Moderate	High	Low to moderate	Low
Load	Low- to moderate-intensity	Low- to high-intensity	High-intensity	Moderate- to high-intensity
Considerations	Recommendations for the volume and load are specific for structural/core exercises; assistance exercises follow the standard 3 set X 10 rep @ moderate intensity; For muscular strength and power programs, ≤ 3 structural exercises are recommended per workout; each muscle group should be targeted ≥ 1 day per week for maintenance and ≥ 2 days per week for improvements/increases			

Complex Training – GOAL: Muscular Hypertrophy/Endurance

Sample 1: ≥3X3 (sets X reps); ≥60-sec rest between sets

Complex 1	Complex 2	Complex 3
KB Deadlift + KB Upright Row + KB Shoulder Press	R. KB Swing + R. KB Clean + R. KB Press	L. KB Swing + L. KB Clean + L. KB Press

*KB = kettlebell; R. = right-side only; L. = Left-side only

Sample 2: ≥3X3 (sets X reps); 60-sec rest between sets

Complex 1	Complex 2	Complex 3
SB Half Pike + SB Prone Leg Lift + SB Pushup	DB Alt. Lunge + DB Goblet Squat + DB Push Press	TRX Row + TRX Torso Rotation + TRX Biceps Curl

*Alt. = alternating sides; DB = dumbbell; OH = overhead; SB = stability ball

Peripheral Heart Action (PHA) Circuit – GOAL: Muscular Power + Aerobic response

1. TRX Squat Jumps	2. DB Floor Press	3. DB RDL
4. DB Bent-over Row	5. TRX Hamstring Curls	6. Seated Shoulder Press

*DB = dumbbell; RDL = Romanian dead lift

Cluster-HIIT – GOAL: Muscular Strength + Aerobic power

30-sec ON @105% Vmax; 90-sec OFF @ 3mph walk; 3% incline for both ON and OFF

Cluster 1	3 HIIT	Cluster 2	3 HIIT	Cluster 3
1. BB Squat		1. DB Shoulder Press		1. KB Sumo Squat
2. BB Bent Over Row		2. BB Deadlift		2. Lat Pulldown
3. SB Sit-up		3. SB Plank		3. Low Back Extension

*BB = barbell; DB = dumbbell; SB = stability ball; KB = kettlebell

Joint-Action Training – GOAL: Muscular Strength

Hip Dominant	Knee Dominant	Horizontal Push/Pull	Vertical Push/Pull
BB Back Squat + Hanging Leg Raise	Seated Good-morning + Dead Bug (alt.)	BB Bench Press + DB Single-arm Row	Smith Shoulder Press + Pull-up
DB Box Step-up + Bird-Dog	DB Single-leg RDL + Quadruped Fire-hydrant (R&L)	DB Incline DB Chest Press + Cable Standing Row	DB Single-arm Shoulder Press + Cable Late Pulldown

*alt = alternating sides; BB = barbell; DB = dumbbell; R&L = right and left side; RDL = Romanian deadlift

NEW RSS-HIIT (reciprocal super sets)

30-sec ON @105% Vmax; 90-sec OFF @ 3mph walk; 3% incline for both ON and OFF

Super Set 1	3 HIIT	Super Set 2	3 HIIT	Super Set 3
TRX Chest Press		RB Upright Row		SB Half Pike
TRX Body Row		RB Kneeling Pulldown		SB Hamstring Curl