

Clinician Notes

Warm-Up (5-10 minutes)= Light aerobic activity: Walking or cycling at low intensity AND/OR Dynamic stretching: Leg swings, arm circles.

High-Intensity Progressive Resistance Training (HiRIT) 5 sets of 5 reps with 2-3 min rest between sets

Squats (Weighted or Bodyweight): Lower body strength and bone density at the femur.

Deadlifts: Strengthen the posterior chain and lumbar spine.

Overhead Press: Upper body strength and posture.

Box/Jumping Chin-Ups or Pull-Ups with landing: Upper body and grip strength. (after 3 wk)

Impact Training (after 12 week) Jump Squats and Hopping

Cool-Down (5-10 minutes): Static stretching: Hamstrings, quadriceps, chest, shoulders, calves

Tracking Progress

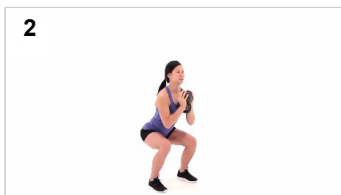
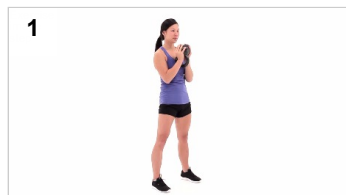
Bone Density: Track changes through DXA scans yearly

Compliance and see strength gains: Use a log to record completed sessions and exercise parameters (weights, reps, sets).

Feedback: Include subjective measures like fatigue or perceived exertion (e.g., RPE scale).

Squats (Weighted or Bodyweight)

REPS: 5	SETS: 5	REST: 2-3 MINUTES BETWEEN SETS	WEEKLY: 2
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Muscle Groups: Quadriceps, glutes, hamstrings, core.

Primary Focus: Lower body strength, femur bone loading.

Setup:

1. Stand with feet shoulder-width apart, toes slightly turned out.
2. If using a barbell, position it across your upper traps (high bar squat) or rear deltoids (low bar squat).
3. Engage your core and set your shoulders back.

Execution:

1. Inhale deeply to brace your core.
2. Initiate the movement by hinging at the hips, then bending the knees as you lower your body.
3. Keep your chest upright and eyes forward; avoid rounding your back.
4. Lower until your thighs are at least parallel to the floor (or as far as mobility allows).
5. Push through your heels to return to the starting position, exhaling as you stand.

Cues:

- "Sit back as if sitting on a chair."
- "Knees should track in line with your toes, not collapsing inward."
- "Maintain a neutral spine throughout the movement."
- "Drive through your heels, not your toes, to engage glutes and hamstrings."

Common Errors to Avoid:

- Knees caving inward (valgus collapse).
- Rounding or hyperextending the lower back.
- Allowing the heels to lift off the ground.

Kettlebell Deadlift

REPS: 5	SETS: 5	REST: 2-3 MINUTES BETWEEN SETS	WEEKLY: 2
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Muscle Groups: Glutes, hamstrings, erector spinae, traps, grip strength.

Primary Focus: Posterior chain strength, lumbar bone loading.

Setup:

- 1. Stand with feet hip-width apart, barbell over midfoot.
- 2. Grip the bar just outside your knees, using an overhand or mixed grip.
- 3. Hinge at the hips, keeping your spine neutral, and lower your torso until your hands meet the bar.
- 4. Engage your lats by pulling your shoulder blades down and back.

Execution:

- 1. Inhale to brace your core and drive through your heels to lift the bar.
- 2. Keep the bar close to your body as you stand, extending your hips and knees simultaneously.
- 3. Lockout at the top with your shoulders down and pelvis neutral.
- 4. Lower the bar by hinging at the hips, reversing the motion.

Cues:

- "Push the floor away rather than pulling the bar up."
- "Keep the barbell in contact with your legs."
- "Engage your lats by imagining squeezing oranges in your armpits."
- "Maintain a flat back—no rounding or arching."

Common Errors to Avoid:

- Rounding the lower back.
- Starting with the hips too high or too low.
- Hyperextending at the top of the lift.

Shoulder Overhead Press in Flexion with Dumbbells

REPS: 5	SETS: 5	REST: 2-3 MINUTES BETWEEN SETS	WEEKLY: 2
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Muscle Groups: Deltoids, triceps, upper traps, core.

Primary Focus:Upper body strength, posture improvement.

- Setup:**
1. Grip the barbell with hands slightly wider than shoulder-width.
 2. Rest the bar across your collarbone, elbows slightly forward.
 3. Stand tall with feet hip-width apart and core engaged.

- Execution:**
1. Press the bar/dumbbells upward in a straight line while exhaling. The shoulders should be at a diagonal from the body.
 2. Keep your head neutral, allowing the bar to pass in front of your face.
 3. Fully extend your arms overhead without locking your elbows.
 4. Lower the bar slowly and with control back to the starting position.

- Cues:**
- "Press the bar overhead like you're threading a needle."
 - "Brace your core as if preparing for a punch."
 - "Keep your wrists stacked over your elbows."

Ways to modify:

performing seating or against a wall.

Start with elbows close to your side and only go until elbows at shoulder height.

- Common Errors to Avoid:**
- Overarching the lower back.
 - Flaring the elbows excessively.
 - Allowing the bar to drift forward.

Neutral Grip Pull up

REPS: 5	SETS: 5	REST: 1-2 MINUTES BETWEEN SETS	WEEKLY: 2
			

Introduce after during phase 2 (~4 week into the program)

Muscle Groups: Lats, biceps, forearms, core.

Primary Focus: Upper body and grip strength.

Secondary: impact training for bone health

Setup:

- 1. Place a box/chair close to a pull-up bar.
- 2. Jump up to grip a pull-up bar with hands shoulder-width apart (chin-up = palms facing you; pull-up = palms facing away).

Execution:

- 1. Engage your lats and lower traps by bringing shoulder blades down and back and pull yourself up until your chin clears the bar.
- 2. Lower yourself slowly (goal 8 sec) and with control until your arms are fully extended. If unable to control the descent, use a resistance band between thighs and bar to assist.
- 3. Once arms are all the way straight then drop down to the ground (ideally 1-2 inches)
- 4. Repeat 1-4 for 5 reps and rest

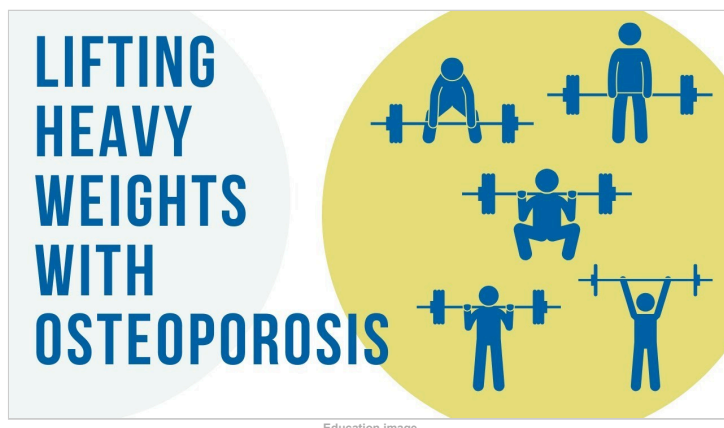
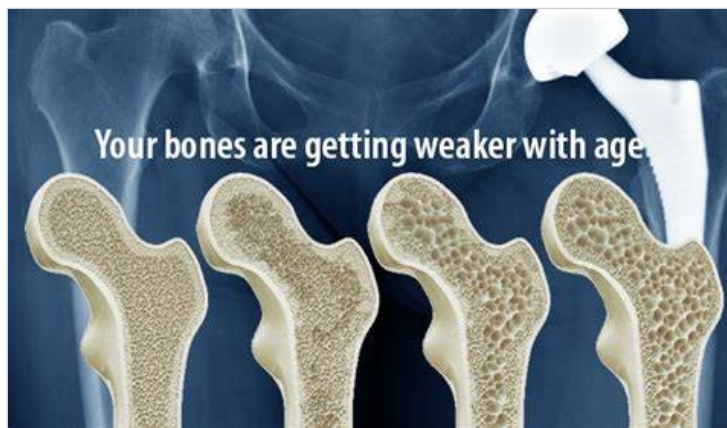
Cues:

- "Imagine pulling the bar down to your chest."
- "Squeeze your shoulder blades together and down the whole time."
- "Keep your core engaged to prevent excessive swinging."

Common Errors to Avoid:

- Relying on momentum.
- Incomplete range of motion (not fully lowering).
- Shrugging shoulders instead of engaging lats.

Liftmor Guidance for Improving Bone Health



HiRIT (High-Intensity Resistance and Impact Training):

Program: Progressive Resistance and Impact Loading

Frequency and Duration

- **Frequency:** 2 sessions per week on non-consecutive days.
- **Session Length:** ~30 minutes.

Warm-Up (All Sessions)

- 5-10 minutes of dynamic movements, e.g., bodyweight squats, arm circles, and hip openers, to prepare joints and muscles.
- 1 set of 5-10 reps at 50% of anticipated maximum for each compound movement.

Phase 1: Familiarization (Weeks 1-2)

Objective: Learn correct form and perform low-load exercises to build confidence and prevent injury.

1. Perform each of the three compound movements (squat, deadlift, and overhead press) with a focus on technique.
2. Use a light weight (e.g., 20 - 30% of perceived maximum).
3. Perform 3 sets of 10 repetitions for each exercise.

Rest Periods:

- Rest 1-2 minutes between sets.

Coaching Cues for Form:

(Refer to detailed cues provided with the images and videos for squat, deadlift, and overhead press.)

Phase 2: Progressive Training (Weeks 3-12)

Objective: Progress to high-intensity training using a 5x5 protocol with proper supervision.

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Exercises: 1) Deadlift 2) Squat 3) Overhead Press 4) adding Jumping Chin-Ups

Load: Aim for RPE less than 16 on a 6-20 scale.

- Start with 5 sets of 5 repetitions using the maximum weight that allows form to be maintained.

1. **Progression:** When 7 reps can be completed easily with current weight, increase by 5-10 lbs.

2. **Adding Impact Loading (Jumping Chin-Ups):**

- Perform 5 sets of 5 repetitions.
- Focus on landing lightly on toes

Rest Periods:

- Deadlift, Overhead Press, Squat, Overhead Press, Jumping Chin-Ups: aim for 2-3 minutes between sets of each type of exercise. Therefore, performing a cycle doing all the exercises for the 1st set of each exercise, then 2nd, etc. allows for minimal down period and in this order allows for rest between muscle groups.

Phase 3: Strength Testing (Weeks 12 and 24)

1. Continue with 5x5 protocol for each compound lift.
2. Adjust load progressively based on RPE.
3. Adding additional impact and agility exercise

The information was gathered mainly from:

1) The Drive Podcast by Peter Attia

Episode #322 - Bone Health for Life: Building Strong Bones, Preventing Age-Related Loss, and Reversing Osteoporosis with Evidence-Based Exercise | Belinda Beck, Ph.D.

2) Navigating bone health: early life influences and advanced strategies for improvement and injury prevention (#214 rebroadcast)

These episodes delves into strategies for building strong bones, preventing osteoporosis, and reversing bone loss with targeted, evidence-based exercise methods.

3) The LIFTMOR HiRIT (High-Intensity Resistance and Impact Training) Research Studies: These studies explore the effectiveness of high-intensity resistance and impact training in reducing osteoporotic fracture risk and improving bone health in older adults with low bone mass.

For the full context and more detailed information, listeners are encouraged to refer to the original podcast episodes and read the research article.