

Training Volume Programming Guide

Implementation-Ready Calculations for Workout Applications

Part 1: Volume Calculation Tables

The following tables provide specific, programmable values for every Experience Level × Training Goal combination. All values represent direct working sets per muscle group per week (sets taken within 0-4 RIR).

1.1 Master Volume Calculation Table

	Experience Level	Start Vol	Weekly +	Max Vol	Rep Range
Maintenance	Beginner	4	0	6	6-12 @ 70-80%
	Intermediate	5	0	6	6-12 @ 70-80%
	Advanced	6	0	8	6-12 @ 70-80%
Hypertrophy	Beginner	8	+2	16	6-12 @ 65-80%
	Intermediate	10	+2	20	6-12 @ 65-80%
	Advanced	12	+2-3	25	6-15 @ 60-80%
Strength	Beginner	4	+1	8	1-5 @ 80-90%
	Intermediate	6	+1-2	12	1-5 @ 80-95%
	Advanced	8	+1-2	15	1-5 @ 85-100%
Power	Beginner	N/A	N/A	N/A	Build strength first
	Intermediate	6	+1	12	1-5 @ 30-60%
	Advanced	9	+1-2	18	1-5 @ 30-90%
Endurance	Beginner	6	+1	10	15-30 @ 40-60%
	Intermediate	9	+1	14	15-30 @ 40-60%
	Advanced	12	+1-2	18	15-30 @ 40-60%

Key: Start Vol = Week 1 sets/muscle/week. Weekly + = Sets to add each week. Max Vol = MRV ceiling before performance decline. Rep Range = Repetitions at percentage of 1RM.

1.2 Direct Calculation Formulas

For programmatic implementation, use these formulas:

- **Weekly Volume** = $\text{Start_Volume} + (\text{Week_Number} - 1) \times \text{Weekly_Increment}$
- **Capped Volume** = $\text{MIN}(\text{Weekly_Volume}, \text{Max_Volume})$
- **Trigger Deload When:** $\text{Weekly_Volume} \geq \text{Max_Volume}$ OR $\text{Performance_Decline} = \text{TRUE}$

1.3 Example Calculations

Example 1: Advanced + Hypertrophy (5-week block)

- Week 1: 12 sets (Start Volume)
- Week 2: $12 + 2 = 14$ sets
- Week 3: $14 + 2 = 16$ sets
- Week 4: $16 + 3 = 19$ sets
- Week 5: $19 + 3 = 22$ sets (approaching Max of 25)

Example 2: Beginner + Strength (4-week block)

- Week 1: 4 sets at 80% 1RM, 5 reps
- Week 2: 5 sets at 82% 1RM, 4-5 reps

- Week 3: 6 sets at 85% 1RM, 3-4 reps
- Week 4: 7 sets at 87% 1RM, 2-3 reps

Example 3: Intermediate + Maintenance (8-week block)

- Weeks 1-8: 5-6 sets (no progression, flat volume)
- Maintain current intensity (weight on bar)
- Frequency: 2x per muscle group per week minimum

1.4 Muscle Group Specific Volume Landmarks

These values represent intermediate-level hypertrophy recommendations. Beginners should reduce by 20-30%, advanced lifters may increase by 10-20%.

Chest	6	8	12-18	20-22	2-3x
Back	6	8	14-22	22-25	2-4x
Quads	6	8	12-18	18-22	2-3x
Hamstrings	4	6	10-16	16-20	2-3x
Glutes	0-4	4	8-12	12-16	2-3x
Side/Rear Delts	6	8	16-22	22-26	2-6x
Front Delts	0	0	0-6	6-12	1-2x
Biceps	4	6	14-20	20-26	2-4x
Triceps	4	6	10-14	14-18	2-4x
Traps	0	4	12-20	20-26	2-4x
Abs	0	0	8-16	20-25	3-5x
Calves	6	8	12-16	16-20	3-5x

Key: MV = Maintenance Volume. MEV = Minimum Effective Volume. MAV = Maximum Adaptive Volume. MRV = Maximum Recoverable Volume. Freq = Recommended weekly frequency.

1.5 Block Transition Protocols

When users chain training blocks (e.g., 8 weeks maintenance then 5 weeks hypertrophy), use these transition rules:

Maintenance	Hypertrophy	Start at MEV (resensitization allows slightly higher start). No deload needed.
Maintenance	Strength	Start at MEV for strength. Increase intensity to 80%+ 1RM. No deload needed.
Hypertrophy	Strength	Optional brief deload (3-5 days). Reduce volume 30-40%, increase intensity.
Hypertrophy	Maintenance	Drop directly to MV. Maintain intensity. No deload required.
Strength	Hypertrophy	Brief deload (3-5 days). Reduce intensity, increase volume to MEV.
Strength	Maintenance	Drop to MV. Reduce intensity to 70-80%. No deload needed.
Any Block	Power	Require intermediate+ experience. Start at power MEV with emphasis on velocity.

Part 2: The Deload Debate

This section examines the scientific evidence for and against scheduled deloads, including the specific critiques raised by Menno Henselmans and others. This information is critical for deciding how (or whether) to implement deloads in your application.

2.1 The Core Controversy

The fitness industry has traditionally recommended scheduled deloads every 4-8 weeks. However, this practice is now being questioned by researchers and coaches, including Menno Henselmans, who argues that the evidence base is weak and that proactive deloading may actually hinder progress.

Menno Henselmans' Core Arguments Against Scheduled Deloads

1. **Recovery is faster than assumed:** Trained individuals doing habituated workouts recover within 24-72 hours, not a full week. Taking a week off is far longer than physiologically necessary.
2. **Fatigue is local, not systemic:** Muscle fatigue is primarily local in nature. It makes no sense to deload your quads because your biceps are fatigued. Full-body deloads ignore this reality.
3. **Gregorian calendar bias:** The concept that deloads should occur on weekly or monthly cycles reflects arbitrary calendar conventions, not physiological requirements.
4. **Unpredictable fatigue accumulation:** Life stress, sleep quality, and nutrition vary unpredictably. Pre-scheduled deloads cannot account for when overreaching actually occurs.
5. **Research shows deloads may hurt strength:** The Coleman et al. (2024) study found that a week off mid-training block slightly impaired strength gains while having no effect on hypertrophy.

2.2 The Scientific Evidence

Coleman et al. 2024: The First Controlled Deload Study

This study (Schoenfeld, Israel, et al.) is the first controlled trial specifically examining deloads. Key findings:

- **Participants:** 39 trained individuals (29 men, 10 women)
- **Protocol:** 9-week training block. DELOAD group took week off at midpoint; TRAD group trained continuously
- **Hypertrophy:** No significant difference between groups (3.6-13.6% increases across both)
- **Strength:** TRAD group showed greater improvements in both isometric ($p=0.924$) and dynamic ($p=0.851$) strength
- **Power and Endurance:** No appreciable differences between groups

Critical Caveat: The deload in this study was complete training cessation, not a reduced-volume active deload. This limits generalizability to real-world deload practices where volume is reduced but training continues.

Delphi Consensus Study (2023)

An international panel of 34 strength and physique coaches reached consensus on deloading practices:

- Universal agreement: training volume should decrease during deloads
- No standardized approach exists; methods vary widely
- Both proactive (scheduled) and reactive (autoregulated) approaches are used
- Deloads perceived to reduce injury risk and training monotony
- Overtraining syndrome incidence is very low in resistance training

Survey of Competitive Athletes (2024)

246 competitive strength and physique athletes surveyed:

- Average deload duration: 6.4 ± 1.7 days
- Average deload frequency: Every 5.6 ± 2.3 weeks
- Common triggers: Performance stalls, increased soreness, joint aches
- Some coaches believe deloads are not a prerequisite for progress

2.3 Reactive vs. Proactive Deloading

Scheduled every 4-8 weeks regardless of fatigue state	Triggered by performance decline or recovery indicators
Full-body reduction in training stress for 5-7 days	Body-part specific: only deload muscles showing fatigue
Simpler to program; doesn't require monitoring	Requires tracking performance, soreness, and recovery
May waste training time when deload isn't needed	Maximizes training time by only deloading when necessary
Supported by tradition and coaching consensus	Supported by recovery physiology and Henselmans research

2.4 Implementation Recommendations for Your App

Given the weak evidence for scheduled deloads and strong arguments for reactive approaches, consider these implementation options:

Option A: Make Deloads User-Controlled (Recommended)

- Do not auto-schedule deloads
- Provide a 'Deload Week' button users can trigger when they feel they need it
- When triggered, reduce volume to MV (maintenance) for 5-7 days
- Allow per-muscle-group deloads (reactive approach)

Option B: Performance-Triggered Deloads

- Track user-reported RPE or weight/rep performance each session
- Trigger deload suggestion when: Performance declines 2+ sessions in a row for same muscle group
- Make the suggestion optional, not forced

Option C: Optional Scheduled Deloads (Legacy Approach)

- Offer as a setting users can enable/disable
- Default: OFF (based on current evidence)
- If enabled, suggest every 4-6 weeks (beginners) or 3-4 weeks (advanced)

2.5 Deload Protocol If Implemented

If a user triggers or is prescribed a deload, use these parameters:

Volume	Reduce to MV (typically ~6 sets/muscle)	Maintains muscle without accumulating fatigue
Intensity	Week 1 weights (or 50-70%)	RP recommends half of Week 1 weights second half
Reps	50% of normal rep targets	Further reduces training stress
Duration	3-7 days (not fixed at 7)	72 hours often sufficient for recovery
Frequency	Same as normal (or 1 less session)	Maintain movement patterns

Part 3: Summary and Implementation Checklist

Quick Reference: The Five Training Goals

Maintenance	Preserve existing muscle mass	Flat ~6 sets/muscle/week	Maintain current loads
Hypertrophy	Maximize muscle size	Progressive: MEV → MRV	60-80% 1RM, 6-15 reps
Strength	Increase force production	Lower volume, high load	80-100% 1RM, 1-5 reps
Power	Rate of force development	Low volume, max velocity	30-60% or 80-90% 1RM
Endurance	Fatigue resistance	Moderate volume, high reps	40-60% 1RM, 15-30 reps

Implementation Checklist

6. **User Onboarding:** Collect experience level (Beginner/Intermediate/Advanced) during account creation
7. **Goal Selection:** Allow users to select training goal for each block (Maintenance, Hypertrophy, Strength, Power, Endurance)
8. **Block Duration:** Let users set block length (typically 4-8 weeks for hypertrophy, 3-6 weeks for strength)
9. **Volume Calculation:** Use Master Table values to calculate weekly volume: $\text{Start_Vol} + (\text{Week} - 1) \times \text{Weekly_Increment}$
10. **Volume Cap:** Never exceed Max_Volume from the table for the experience level and goal
11. **Deload Handling:** Implement user-triggered or performance-triggered deloads (not auto-scheduled)
12. **Block Transitions:** Use Block Transition Protocols table when users chain different goal blocks
13. **Individual Variation:** Allow $\pm 30\%$ user adjustment from calculated volumes based on recovery feedback

Key Takeaways

- **Volume drives hypertrophy:** 10-20 sets/muscle/week is the evidence-based range for most trained individuals
- **Intensity drives strength:** Strength requires heavier loads (85%+ 1RM) but lower volume than hypertrophy
- **Maintenance is low-cost:** Only ~6 sets/muscle/week needed to preserve gains
- **Deloads are optional:** Evidence for scheduled deloads is weak; reactive/user-triggered approach is more defensible
- **Progression matters:** Volume should increase weekly within a block (typically +1-3 sets per muscle)
- **Individual variation is significant:** Allow ~30% adjustment from calculated values based on user feedback