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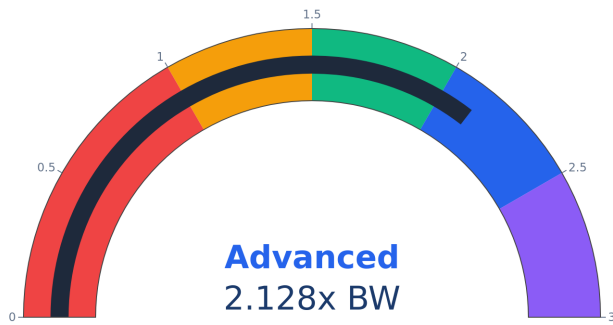
Deadlift Form Analysis

1 rep(s) analyzed | 12s video | 500 lbs

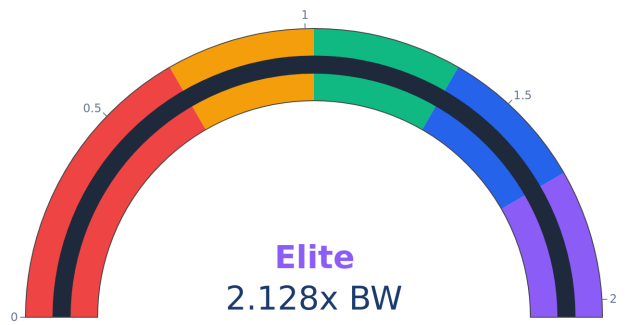
Generated March 28, 2026

Key Metrics

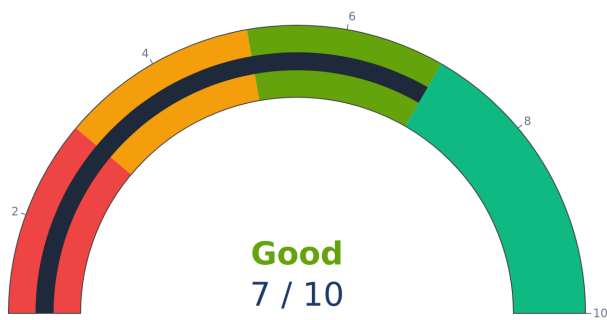
Strength Level



Strength Level (Age-Adjusted)



Lifting Form



Deadlift Form Analysis Report

Executive Summary

This report analyzes a single-repetition conventional deadlift of **500 lbs** performed by a **68-year-old male lifter weighing 235 lbs** — a pull exceeding 2.1× bodyweight, which is an outstanding feat of strength at any age. The lift was completed successfully with a strong lockout and excellent lower-body mechanics (no hip shoot or knee cave); however, **significant thoracolumbar rounding was detected in 78% of rep frames**, representing the primary technical concern and injury-risk factor. Addressing spinal positioning during the initial pull should be the top priority going forward.

Video Overview

| Parameter | Value |

|---|---|

| **Video Duration** | 12.4 seconds |

| **Total Frames Analyzed** | 187 |

| **Analysis Sample Rate** | 15.0 fps |

| **Reps Detected** | 1 |

| **Lifter Age / Sex / BW** | 68 / Male / 235 lbs |

| **Estimated Load** | 500 lbs |

| **BW Multiple** | $\approx 2.13\times$ bodyweight |

| **Analysis Method** | YOLOv8 Pose keypoint detection |

The clip captures one maximal or near-maximal single. The rep begins at **1.869 s** and concludes at **7.941 s**, yielding a total rep duration of approximately **6.1 seconds** — consistent with a heavy, grinding effort.

Rep-by-Rep Breakdown

Rep 1 — (1.869 s → 7.941 s)

| Metric | Value |

|---|---|

| **Overall Form Score** | 7 / 10 |

| **Setup Quality** | Fair |

| **Lockout Quality** | Strong |

| **Back Rounding** | 78% of frames (severity 78/100) |

| **Hips Rising Early** | 0% of frames |

| **Knees Caving** | 0% of frames |

Phase timeline and observations:

- 1. Initial Setup (1.869 s → 2.870 s):** The lifter approaches the bar and establishes a starting stance. This ~1-second window represents the primary address of the barbell — feet placement, hand positioning, and initial bracing.
- 2. Grip & Position Adjustments (2.870 s → 5.606 s):** The data reveals four rapid *at_floor* ↔ *setup* transitions between **2.870 s** and **5.606 s** (brief cycles at approximately 3.403 s, 3.871 s, 4.271 s, and 4.471 s). This pattern indicates the lifter was re-gripping, resetting hips, or cycling breath/brace multiple times before committing to the pull — a common and often prudent strategy with maximal loads, though it may signal difficulty achieving a comfortable, locked-in start position.
- 3. Committed Pull (5.606 s → 7.941 s):** The bar breaks the floor at approximately **5.606 s** and reaches lockout by **7.941 s** (~2.3 seconds of concentric effort). Back rounding was pervasive throughout this window. Despite the spinal flexion, hip drive remained controlled (0% early rise) and the knees tracked cleanly (0% caving), demonstrating strong posterior-chain coordination.

Key Observation (from analysis engine): *"Rep 1: significant back rounding."*

Technical Analysis by Phase

Setup & Starting Position

Rating: Fair

The lifter's setup spanned from **1.869 s** to approximately **5.606 s** — an extended period that included multiple re-sets. While taking time to establish position is acceptable (particularly at $\approx 2.1\times$ BW), the repeated adjustments between **2.870 s** and **5.606 s** suggest the lifter may have struggled to find an optimal hip height, wedge into the bar, or achieve adequate lat engagement before initiating the pull.

At this load, a prolonged setup can drain neural drive and lead to a less explosive break from the floor. The "fair" setup quality rating likely reflects a starting position where the thoracic spine was already beginning to round before the concentric phase began — meaning the lifter may never have established a truly neutral spine under tension.

Considerations for a 68-year-old lifter: Age-related decreases in thoracic mobility and intervertebral disc hydration make the setup phase even more critical. A slightly higher hip start or wider stance may facilitate a more upright torso.

Initial Pull (Floor to Knees)

The bar broke the floor at approximately **5.606 s**. The 78% back-rounding metric indicates that spinal flexion was present almost immediately upon initiation and persisted throughout the lift. Critically, however, **hips-rising-early was recorded at 0%**, which means the lifter did *not* exhibit the classic "stripper pull" fault where the hips shoot up while the chest drops. Instead, the hip and shoulder rose at a proportional rate — the issue is that the entire trunk was operating in a flexed posture from the outset.

This distinction is important: the fault here is **static spinal flexion** (likely originating in the thoracolumbar junction), not a *dynamic* loss of position. This is somewhat less dangerous than progressive rounding under load but still warrants correction, especially given the lifter's age and the magnitude of the load.

Mid-Range (Knees to Lockout)

As the bar passed the knees (estimated around **6.5–7.0 s**), the back rounding persisted but the lifter was able to drive the hips through effectively. Knee tracking remained excellent — **0% caving** — indicating strong adductor/abductor balance and adequate lateral hip stability. The quads and glutes appear to be well-developed relative to the erector spinae's capacity to maintain extension at this load.

Lockout

Rating: Strong

The lift was completed with authority by **7.941 s**. The "strong" lockout rating indicates full hip extension and shoulder retraction without significant hitching or soft-knee issues. This speaks to robust glute and upper-back strength at end-range. For a competition-style pull, this lockout would likely receive white lights.

Strengths

- **Exceptional absolute strength for age and bodyweight.** A 500 lb deadlift at 235 lbs BW and 68 years old (2.13x BW) places this lifter well into the advanced/elite category for his demographic.
- **Zero hip shoot (0% hips-rising-early).** Throughout the pull from **5.606 s** → **7.941 s**, the hips and shoulders rose in concert, demonstrating excellent posterior-chain sequencing and wedge maintenance.
- **Zero knee cave (0% knees-caving).** Knee tracking was clean across all analyzed frames, indicating strong VMO, glute medius, and hip external rotator function.

- **Strong lockout.** Full hip extension was achieved decisively by **7.941 s** — no grinding, soft lockout, or upper-back collapse at the top.
 - **Patience at the bar.** The multiple re-sets between **2.870 s** and **5.606 s** show a lifter who does not rush into a maximal pull — an important safety habit, particularly at this load.
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Areas for Improvement

- **Back rounding (78% of frames, severity 78/100).** This is the dominant technical fault. Spinal flexion was detected in the vast majority of concentric frames beginning at approximately **5.606 s** and continuing through lockout at **7.941 s**. At 500 lbs, the shear forces on flexed lumbar segments are substantial. While some upper-back rounding is tolerated in competitive powerlifting, persistent *lumbar* flexion at maximal loads increases disc herniation and spinal ligament injury risk — a particularly important consideration for a 68-year-old lifter.
 - **Setup efficiency (rated "fair").** The four grip/position resets between **2.870 s** and **5.606 s** extended the time under pre-tension and may have contributed to a suboptimal starting spine position. A more systematic, repeatable setup ritual could improve consistency and ensure the lifter achieves full lat engagement and bracing before initiating the pull.
 - **Possible bracing deficit.** While intra-abdominal pressure was not directly measured, the degree of spinal flexion under load is often indicative of either insufficient bracing strategy or a bracing capacity that is overwhelmed by the load. Dedicated breathing and bracing practice may help.
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Recommended Drills & Exercises

1. Paused Deadlift at 1–2 Inches Off the Floor (60–70% 1RM)

Purpose: Reinforces a rigid, neutral spine position at the most mechanically disadvantaged point of the lift.

How to perform: Set up normally and break the bar 1–2 inches off the floor. Hold for a full 2–3 seconds while actively maintaining chest-up position and maximal brace. Complete the pull. Perform 3–4 sets of 2–3 reps.

Connection to fault: Trains the lifter to *own* the starting position and resist the spinal flexion pattern that was observed from **5.606 s** onward. The pause eliminates momentum and forces isometric erector engagement.

2. Banded / Slow-Eccentric Good Mornings

Purpose: Builds erector spinae endurance and positional strength through the hip-hinge pattern under controlled conditions.

How to perform: With a barbell on the back (or safety-squat bar for comfort), hinge forward over 3–4 seconds, maintaining a neutral spine throughout. Pause at the bottom, then return to standing. Use moderate loads (40–50% of squat 1RM). Perform 3 sets of 8–10 reps.

Connection to fault: Directly addresses the back-rounding fault by strengthening the spinal erectors' ability to resist flexion under load. The slow eccentric component builds time-under-tension tolerance that transfers to the deadlift's concentric phase.

3. Dead Bugs with Diaphragmatic Bracing (Warm-Up / Daily)

Purpose: Develops intra-abdominal pressure (IAP) and 360° trunk bracing independent of spinal extensor strength.

How to perform: Lie supine with arms extended toward the ceiling and hips/knees at 90°. Take a full belly breath, brace as if preparing for a heavy pull, and slowly extend one leg and the opposite arm while maintaining a fully braced core and flat low back. Alternate sides for 3 sets of 8 per side.

Connection to fault: A stronger, more reflexive brace creates an internal "cylinder" of pressure that supports the lumbar spine and reduces reliance on passive spinal structures — directly countering the rounding observed throughout this lift.

4. Trap-Bar / Block Deadlifts (Reduced Range of Motion)

Purpose: Allows the lifter to train heavy hip extension with a more upright torso, reducing spinal flexion demands while maintaining neural drive for heavy loads.

How to perform: Set the barbell on 2–4" blocks (or use a high-handle trap bar). Pull with identical cueing to a conventional deadlift — chest up, lats engaged, big brace. Because the range of motion is shortened, the lifter can practice maintaining extension at loads closer to their 1RM. Perform 3–4 sets of 2–3 reps at 85–95% effort.

Connection to fault: Provides a training environment where the lifter can practice maintaining spinal neutrality under near-maximal loads without the positional demands of a full-ROM pull. Especially valuable for a 68-year-old lifter managing recovery and joint health.

5. Seated Band-Resisted Thoracic Extensions

Purpose: Improves thoracic spine extension mobility — a common limiting factor in maintaining an upright pulling posture, particularly in older lifters.

How to perform: Sit on a bench with a light resistance band looped around the upper back (anchored in front at chest height). With hands behind the head, extend the upper back against the band's resistance, squeezing the shoulder blades together and lifting the chest. Hold for 2 seconds at end range. Perform 3 sets of 12–15 reps.

Connection to fault: If the 78% back-rounding metric includes a thoracic component (likely at this age), improving T-spine extension range of motion gives the lifter more "room" to maintain a neutral spine during heavy pulls. This is a low-impact drill that can be performed daily.

Video Quality Assessment

The analysis was conducted at **15.0 fps** across **187 frames**, which provided adequate temporal resolution for phase detection and angle measurement across this single-rep lift. A few notes for future filming sessions:

- **Camera angle:** Ensure the camera captures a true **sagittal (side) view** at approximately hip height and 8–10 feet from the lifter. This maximizes the accuracy of shoulder-hip-knee angle measurements used to detect back rounding.
- **Lighting & contrast:** Consistent, well-lit conditions help the pose-estimation model track keypoints reliably. Avoid backlighting or highly reflective gym floors.
- **Full body in frame:** Ensure the lifter's feet and head remain visible throughout the entire range of motion, including at lockout.
- **Stability:** A tripod or phone mount eliminates camera shake that can introduce noise into keypoint tracking.

For detailed filming guidelines, see: <https://gameanalyze.ai/guides.html>

Overall Assessment

Estimated Skill Level: Advanced / Competitive

This lifter is pulling **2.13× bodyweight at age 68** — a remarkable achievement that reflects decades of training dedication and considerable posterior-chain strength. The lift was completed successfully with excellent hip mechanics, clean knee tracking, and a decisive lockout.

Top Priority: Reducing back rounding during the initial pull phase. The 78% back-rounding detection rate is the single most important issue to address — not because the lift failed, but because **sustained lumbar flexion**

under 500 lbs poses a meaningful injury risk, particularly for a mature lifter whose spinal tissues have reduced tolerance for repeated flexion-compression cycles. Incorporating paused deadlifts, dedicated erector strengthening, and a more disciplined bracing protocol should progressively improve spinal positioning.

Encouragement: Pulling 500 lbs at 68 years old is elite-level strength by any standard. The fact that this lift was completed with controlled hips and stable knees shows a technically proficient lifter. With targeted attention to spinal positioning and bracing, there is every reason to believe this lifter can continue pulling at this level — or beyond — safely and for years to come. Outstanding work.

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