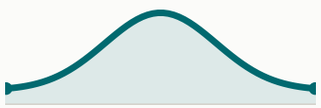
Voltra Strength Curve Reference

Upper body

EXERCISE	STRENGTH CURVE	VOLTRA MODE	MOUNT	WHY
Bench Press	**Ascending**  Weak off the chest, strong at lockout	**Chains** CONFIRMED	Low mount behind the bench, cable to a chest strap/bar	*Classic ascending curve - textbook reference*
Overhead Press	**Ascending**  Weak at the shoulder, strong at lockout	**Chains** CONFIRMED	Low mount in front, cable to a bar at shoulder height	*Classic ascending curve - textbook reference*
Pull-Up / Row	**Descending**  Strong at start of pull, weak at full extension	**Inverse Chains** CONFIRMED	Bar mount overhead (pull-up) or waist-height mount (row)	*Classic descending curve - textbook reference*
Bicep Curl	**Bell**  Weak at both ends, strong around mid-range (~90 deg)	**Mountain Mode** CONFIRMED	Low mount, cable to a handle at hand height	*Classic bell curve - textbook reference*
Lateral Raise	**Unclear ?**  Isokinetic torque studies peak at 30-60 deg; EMG/hypertrophy sources say peak activation near 90 deg	**Test flat tension** TEST THIS	Low-to-mid rack mount, single handle at hand height	*Torque data and training/EMG data disagree - go by feel*
Shoulder External Rotation	**Ascending**  Weak rotated in (30 deg), strong rotated out (135 deg) - torque rose steadily start to end	**Chains** CONFIRMED	Mid rack mount at elbow height, cable pulling across the body	*Direct isometric torque-angle thesis data (18.9 Nm at 30 deg -> 30.0 Nm at 135 deg)*
Shoulder Internal Rotation	**Bell (early peak)**  Torque rises to a peak near 60 deg, then declines through the rest of the range	**Mountain Mode** CONFIRMED	Mid rack mount at elbow height, cable pulling from the side you rotate toward	*Same thesis: peak 39.6 Nm at 60 deg, declining to 28.4 Nm at 135 deg*
Chest Fly	**Unclear ?**  No direct torque-angle curve found; plausible stretch-position weak point by analogy to fly	**Test flat tension** TEST THIS	Shoulder-height rack mount, single-arm cable out to the side	*Biomechanical reasoning only, not a measured curve - verify by feel*

Bench/OHP/pull-up-row/curl are established textbook classics used as reference points earlier in this thread. Shoulder rotation curves: A Comparison of Strength and Resistance Curves for the Internal and External Rotators of the Shoulder (ETSU thesis, dc.etsu.edu). Lateral raise and chest fly: no clean direct torque-angle curve found - flagged for in-person testing.

Voltra Strength Curve Reference

Lower body

EXERCISE	STRENGTH CURVE	VOLTRA MODE	MOUNT	WHY
Squat	**Ascending**  Weak at the bottom, strong at the top	**Chains** CONFIRMED	Low front or back mount, cable to a belt/harness	*Classic ascending curve - textbook reference*
Deadlift	**Ascending**  Weak off the floor, strong at lockout	**Chains** CONFIRMED	Low mount or Travel Platform, cable to a bar/belt at floor level	*Your original injury lift - clear standing rule before near-max singles*
RDL	**Ascending**  Weak in the deep hip-hinge (bar near shin), strong near lockout	**Chains** CONFIRMED	Low mount or Travel Platform, cable to a bar/belt at floor level	*Same hip/knee extension mechanics as the deadlift, just the top portion of the ROM*
Hip Abduction (glute med)	**Descending**  Strong near neutral, weak at end-range abduction	**Inverse Chains** CONFIRMED	Low rack mount, ankle cuff, hand on rack for support	*Direct torque-angle studies found this session*
Hip Extension (kickback)	**Descending**  Strong with hip flexed at the start, weak at lockout	**Inverse Chains** CONFIRMED	Low rack mount or Travel Platform, ankle cuff	*Peak torque at 90 deg flexion, only ~36% capacity at lockout*
Lying Hamstring Curl	**Descending**  Strong at full extension, weak at full flexion	**Inverse Chains** CONFIRMED	Travel Platform on the ground, ankle strap, lying prone	*Corrects your label - same weak point, opposite mode name*
Standing Calf Raise	**Descending**  Strong at the stretched bottom, weak at the contracted top	**Inverse Chains** CONFIRMED	Low mount, cable to a waist belt/harness	*Contradicts the mountain guess - the top is the real grind point*
Hip Adduction	**Unclear ?**  Length-tension logic says descending; adductor-machine convention says ascending	**Test flat tension** TEST THIS	Medium-height mount, ankle cuff	*No direct torque-angle study found - go by feel*
Hip Flexion	**Unclear ?**  Flatter/mixed: rectus femoris peaks early, iliopsoas peaks in deep flexion	**Inverse Chains (tentative)** TEST THIS	Low mount, ankle cuff pulling the leg forward	*Not a clean descending line - verify by feel*

Sources this session: PMC4164157, EMRES pilot study, JOSPT 2001, PMC5534143, PMC4471746, Frontiers in Neurology PMC7155781, ExRx.net, RDLFITNESS, Atlantis Strength, PLOS ONE 2025, KangaTech, PMC7365227. Squat/deadlift/RDL are textbook ascending-curve reference points (grindergym.com, kensoforge.com), not newly researched this session.