MCP SERVER | NO CODE | CLOUD HOSTED

Hypertrophy Rep Range Calculator MCP for AI Agents

Optimizing Training Volume and Intensity for Muscle Hypertrophy

The Hypertrophy Rep Range Calculator manages advanced workout optimization by monitoring total weekly volume, tracking intensity targets, and evaluating effective stimulus for muscle growth. It helps serious lifters ensure they are building toward optimal results without overtraining or under-stimulating any muscle group.

A+ Quality Score 100/100

hypertrophy | training | fitness-tracking | muscle-growth | workout-optimization

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vinkius.com/mcp/hypertrophy-rep-range-calculator

SCAN TO VIEW

The connectivity layer between AI and the world's software.

Vinkius sits between AI and every application. All communication passes through Vinkius Cloud via the Model Context Protocol (MCP) — with governance, observability, and security at every layer.

Your AI Connections Run Through Vinkius Cloud

The world's largest managed MCP catalog

Vinkius is the connectivity layer where AI connects to the software your business already runs. We handle the hosting, the security, the credentials, the uptime — you get agents that actually do things.

We operate the world's largest managed MCP catalog. Major SaaS platforms, CRMs, databases, and cloud providers — running, monitored, production-ready. This MCP server is hosted and maintained by the Vinkius Cloud for AI Agents.

> *The agent doesn't manage credentials, doesn't manage uptime, doesn't manage security. Vinkius does.*
>
> — Architecture principle

Four Pillars of the Vinkius Runtime

01 — Security by design

Credentials stay encrypted at rest via AES-256. The AI agent never touches raw keys — they're injected into a sandboxed V8 isolate at runtime. Actions are logged, and connections have an emergency kill switch.

02 — Built on MCP Fusion

This MCP server was built with **MCP Fusion**, the open-source framework (Apache 2.0) that powers the entire Vinkius catalog. Schema-as-firewall strips undeclared fields, compiled PII redaction runs at zero overhead, and cryptographic lockfiles produce git-diffable audit trails.

03 — Deterministic observability

Eight immutable metrics per endpoint: request volume, p95 latency, error rate, active connections, cost attribution. A live payload feed logs every tool call with mutation detection.

04 — Autonomous operations

Servers are deployed, monitored, and patched autonomously. New capabilities and security patches ship weekly. Zero-downtime deployments ensure continuous availability across all managed MCP servers.

AES-256	Ed25519	24h TTL	V8 Isolate
Encryption at rest	PKI vault signatures	Ephemeral session keys	Sandboxed execution

One Token. Instant Access.

Every MCP server on Vinkius is accessed through a **Connection Token**. Tokens are generated in the cloud dashboard and produce a unique MCP endpoint URL. Paste this URL into any MCP-compatible client — no SDK required.

A single token can serve **multiple AI clients simultaneously**, or you can issue separate tokens per client for granular access control. Each token tracks its own request count, last activity timestamp, and can be individually enabled or revoked.

MCP ENDPOINT

```
https://edge.vinkius.com/{token}/mcp
```

Claude · Cursor · VS Code · Windsurf · Grok · Gemini

Security Is the Architecture

Security in Vinkius is not a feature — it's the foundation of the runtime. The gateway enforces multiple independent protection layers between AI agents and third-party APIs.

01 — Ed25519 PKI Vault

Every workspace has an Ed25519 Master Key. Session keys are generated ephemerally (24h TTL) and signed by the Master Key. Credentials never leave the vault boundary.

02 — V8 Isolate Sandboxing

Tool code runs inside isolated-vm V8 isolates with 64 MB memory caps and per-request timeouts. No filesystem access, no network access except through the SSRF-guarded fetch bridge.

03 — SSRF Guard

All outbound HTTP requests are DNS-resolved and validated before execution. Private IP ranges (10.x, 172.16-31.x, 192.168.x, AWS metadata 169.254.x) are blocked at the network layer.

04 — DLP & PII Redaction

A ResponseGuard pipeline intercepts every tool response. Configurable redaction patterns strip sensitive fields (emails, SSNs, card numbers) before data reaches the AI agent.

05 — Cryptographic Audit Trail

Every request is signed into a SHA-256 hash chain with Ed25519 signatures. Events form a tamper-proof, SIEM-exportable forensic record.

06 — Honeytoken Trap System

Phantom credentials are injected into isolated environments. If a honeytoken is used outside Vinkius infrastructure, the server is quarantined instantly.

Emergency Kill Switch

EU AI Act Art. 14(1) Compliant

The kill switch is an **emergency halt** mechanism — not a simple toggle. When triggered, it executes three actions atomically:

01 — Server deactivated

The MCP server is immediately taken offline across the entire cluster.

02 — All tokens revoked

Every connection token is invalidated. Total lockout — reconnection blocked until new tokens are issued.

03 — WebSocket connections killed

Active connections terminated via Redis pubsub broadcast. Propagates to every runtime node in the cluster.

Full Visibility. Zero Guesswork.

The Vinkius cloud dashboard includes a full MCP Governance suite — real-time analytics and security controls for production AI operations.

Control Plane

KPI dashboard with request volume, latency, success rate, token consumption, and AI-generated operational briefings.

Agent Activity

Which AI clients are connecting, how often, and what they're doing — real-time session tracking.

FinOps

Cost tracking per tool, payload compression savings, budget optimization signals, and consumption trends.

Tool Health

Slowest and most error-prone tools, with actionable root-cause insights and performance baselines.

Firewall & DLP

PII redaction activity, sensitive data protection counters, and security event timeline.

Incident Log

Error trends, failure rates, status-code breakdowns, and forensic audit trail access.

> Get started at **cloud.vinkius.com** — connect your AI agent in under 60 seconds.

Hypertrophy Rep Range Calculator MCP

4 tools available
Cloud-hosted on Vinkius

Optimizing your training means more than just counting sets; it means managing the whole cycle of adaptation. This MCP lets you build a comprehensive view of your lifting program, keeping track of everything from weekly total workload to specific intensity targets like RIR (Reps in Reserve). You can tell your agent what your aggregate volume is for any muscle group, check if that load hits optimal growth targets, and even figure out which parts of your training are actually contributing to hypertrophy based on how hard you pushed. It's the perfect tool when managing accumulation phases, intensification cycles, or scheduled deload weeks. Connecting this MCP through Vinkius gives your AI client access to a full library of fitness tools, letting you manage every variable that matters for serious muscle building.

Core Capabilities

01 — Calculate total weekly volume by muscle group

It sums up all the sets performed across different exercises for a specific body part over a week.

02 — Check if your overall weekly volume is adequate

It compares your current training load against established minimum and maximum adaptive volume ranges to grade your progress.

03 — Compute the effective stimulus of your workout

It analyzes your intensity metrics (like RIR) to determine how much of your total work is actually driving growth, separating quality effort from junk volume.

04 — Get recommended RIR targets for a phase

It provides specific rep-in-reserve goals based on the training stage you are currently in (e.g., accumulation or deload).

One Click on Vinkius — From Prompt to Execution

Available at **vinkius.com/mcp/hypertrophy-rep-range-calculator** — connect your AI agent in three steps.

01 First, define your current mesocycle phase and input all your planned sets and rep ranges for the coming week.

02 Next, ask your agent to run a full volume assessment. It will calculate total sets per muscle group and check if that load is within optimal hypertrophy parameters.

03 Finally, prompt it to compute the effective stimulus, giving you a clear grade on whether your intensity levels are sufficient for growth.

The bottom line is, it turns raw workout data into actionable metrics so you know exactly how hard you need to train next time.

Built For

This MCP is built for serious lifters and coaches who understand the science behind muscle growth. If you're tired of guessing if your training load was enough, this tool provides the metrics needed to dial in your program.

Strength Coach

They use it to manage client volume across entire mesocycles, ensuring clients peak correctly for a specific event or goal.

Advanced Athlete

They run weekly analyses to verify that their total training load is hitting the minimum effective volume (MEV) needed for steady improvement.

Personal Trainer

They use it to guide new clients through complex phases, like knowing exactly what RIR target they should hit during an intensification block.

What Changes When You Connect

01 Know exactly if your week's workload was enough. The `evaluate_volume_adequacy` tool compares your total sets against scientific minimums, so you never train in the dark.

02 Stop guessing about intensity. Instead of just tracking reps, use `compute_effective_volume` to see which high-effort training days are actually driving growth.

03 Manage complex phases like intensification or deloading easily. The calculator provides specific RIR goals via `get_rir_targets`, keeping your focus sharp.

04 Build smarter programs by tracking total load accurately. Use `calculate_group_volume` to ensure you aren't neglecting any major muscle group over time.

05 Streamline program adjustments. You can use the entire suite of tools to analyze a week's work and immediately adjust the next cycle's plan.

Real-World Applications

I need to know if my current training load is enough for growth.

You ask your agent: 'Is my total volume of 12 sets for quads adequate if the MEV is 8 and MRV is 15?' The agent runs `evaluate_volume_adequacy` and tells you exactly where you stand, so you know whether to push harder or back off.

My program feels great, but I want data on my quality of effort.

You input your RIR data for the week. The agent uses `compute_effective_volume` and grades your stimulus—it shows you that while your total sets were high, your effective volume was low because you didn't push hard enough.

I'm starting a new mesocycle and need to know my intensity targets.

You ask: 'What RIR should I hit during the intensification phase?' The agent immediately runs `get_rir_targets` and gives you the precise rep range (e.g., 0-2) needed to maximize muscle stimulus.

I'm running out of time to manually count my sets for a client.

You list your exercises and sets. The agent uses `calculate_group_volume` to instantly give you the total weekly volume per major muscle group, saving you from spreadsheet errors.

Patterns to Avoid

Ignoring Intensity Metrics

✗ AVOID

You just track your total sets for a week. You hit 20 sets on chest and think you trained hard, but the volume was built with too many easy reps.

✓ INSTEAD

Don't rely only on set counts. Use `compute_effective_volume` to measure how much of that work actually counted toward growth, giving you a true picture of stimulus.

Mixing Up Volume Targets

✗ AVOID

You think your volume is fine because it's over the minimum threshold (MEV), but you don't know if it's close to your maximum adaptive limit (MAV).

✓ INSTEAD

Use `evaluate_volume_adequacy`. It doesn't just check for 'enough'; it grades your week against a full spectrum of scientific volume targets.

Over-relying on Simple Set Counts

✗ AVOID

You manually sum up every set and think you've optimized, but forget that different phases require wildly different levels of effort (RIR).

✓ INSTEAD

Always check your phase requirements first. Use `get_rir_targets` to dial in the correct intensity before calculating volume.

The Right Fit

Use this MCP if you are a serious lifter or coach who needs objective, data-driven feedback on training load and stimulus. You need to know not just *what* you did, but *how effective* it was for muscle growth. It's perfect when you are transitioning between phases—like moving from accumulation to intensification—because it helps you adjust your RIR targets and total volume accordingly. Don't use this if you only want a simple daily workout list or just need basic set counting; that requires much simpler tools. If your goal is just general fitness tracking without specific growth metrics, there are broader health apps available. But for optimizing hypertrophy with precision, this MCP is the tool.

Hypertrophy Rep Range Calculator: Managing Training Volume and Load

Right now, logging a week's worth of training involves clicking through multiple apps, manually summing sets in spreadsheets, and trying to remember if the volume was 'enough.' You often end up comparing raw set counts against vague guidelines, leading to guesswork about whether you hit your optimal stimulus range.

With this MCP, that process disappears. Your agent takes all the data—sets, exercises, phases—and instantly calculates your total group workload and grades it for adequacy. You get a clear grade on your week's training so you know if you can push harder or back off next cycle.

Hypertrophy Rep Range Calculator: Optimizing Intensity and Recovery

Manually cross-referencing current phases with required intensity is a huge pain point. You have to look up optimal RIR ranges, then compare that against your actual performance for the week, all while keeping track of accumulated fatigue.

This MCP handles all that complexity automatically. It provides specific target RIRs based on your phase and helps you compute the effective stimulus, making sure every rep counts toward actual growth.

Hypertrophy Rep Range Calculator: 4 Tools for Volume Analysis

Use these tools to calculate weekly set totals, check if your volume is adequate for growth, compute effective stimulus, or find target RIR ranges.

#	TOOL	DESCRIPTION
01	`compute_effective_volume`	Calculates the quality of your training stimulus to determine how much effort is actually contributing to hypertrophy.
02	`calculate_group_volume`	Provides a detailed total count of weekly sets for any specified muscle group.
03	`get_rir_targets`	Retrieves the recommended range of reps in reserve (RIR) appropriate for your current training phase.
04	`evaluate_volume_adequacy`	Checks your total weekly volume against scientific benchmarks to tell you if it's optimal, too low, or too high.

See It in Action

Real prompts you can use once this MCP is connected to your AI agent through Vinkius Cloud.

U I just finished a week of training for my client who is in an intensification block. What's the ideal RIR target?

Intensification Phase Recommendations

For this phase, you should be aiming for failure closer to the muscle's limit.

- **Target RIR Range:** 0–2 (meaning you only had 0 to 2 reps left in the tank when you finished).
- **Goal:** Maximize mechanical tension and metabolic stress. Keep volume high, but prioritize intensity over sheer set count.

U Can you check my total weekly sets for chest and back? I did Bench (3×10), DB Flyes (4×12), and Rows (4×10) this week.

Weekly Volume Report

MUSCLE GROUP	TOTAL SETS COMPLETED
Chest	7 sets
Back	4 sets

Next Step: These totals are useful, but remember to check if they fall within your optimal range!

U I did a week of heavy lifting, but I'm worried about overtraining. Should I reduce my volume or increase intensity?

Volume Adequacy Check: Quads

- **Input Volume:** 15 sets
- **MEV (Min):** 10 sets
- **MRV (Max):** 20 sets

Assessment: Your volume is **Optimal**. You are safely within the adaptive zone. Focus on maintaining that high intensity next week.

Frequently Asked Questions

01 **How does the Hypertrophy Rep Range Calculator help me know if my training load is sufficient?**

It evaluates your volume against scientific benchmarks, telling you if your sets are optimal, too low, or too high. This keeps you from wasting effort on inadequate workouts.

02 **I'm struggling to balance intensity and overall volume with the Hypertrophy Rep Range Calculator.**

The tool helps by computing effective stimulus. It separates your total set count into 'junk' volume versus high-quality, growth-driving effort.

03 **What RIR should I be targeting when I switch to a deload week?**

It provides specific recommendations for the current phase. For a deload, it will suggest a much lower and safer target RIR range, preventing unnecessary fatigue.

04 **Can this MCP calculate my total volume across multiple muscle groups at once?**

Yes, you can give it data for several exercises. It aggregates the numbers to give you a clear, organized weekly set count per major muscle group.

05 **Is the Hypertrophy Rep Range Calculator only for bodybuilders or does it work generally?**

It applies general training science principles used by serious lifters. It helps anyone who tracks sets and intensity to optimize their performance cycle.

Go Live in 60 Seconds

Get your connection token from **cloud.vinkius.com**, then paste the endpoint URL into any MCP-compatible client.

YOUR MCP ENDPOINT

```
https://edge.vinkius.com/[TOKEN]/mcp
```

CLIENT	WHERE TO CONFIGURE
Claude AI	Profile → Customize → Connectors → "+" → Add custom connector → Paste endpoint
Cursor	Settings → Features → MCP Servers → "+ Add New MCP Server" → Type: SSE → Paste endpoint
VS Code	Ctrl/Cmd+Shift+P → "MCP: Add Server" → add `"hypertrophy-rep-range-calculator": { "url": "…" }`
Windsurf	MCP Settings → `mcp_settings.json` → Add endpoint URL
ChatGPT	Settings → Tools & plugins → Add MCP server → Paste endpoint
Gemini	Extensions → Add MCP Server → Paste endpoint URL

ASK AN AI ABOUT THIS

Let your preferred AI explain this MCP server

- Ask ChatGPT
- Ask Claude
- Ask Perplexity
- Ask Gemini
- Ask Grok

READY TO CONNECT

Hypertrophy Rep Range Calculator is live on Vinkius Cloud.

Get your connection token, paste it into your AI agent, and start building. No SDK. No deployment. Just results.

Start at cloud.vinkius.com →

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