MCP SERVER | NO CODE | CLOUD HOSTED

One-Rep Max Calculator MCP for AI Agents

Accurate Strength Baseline Testing and Training Program Design

The One-Rep Max Calculator estimates your true lifting potential without needing a risky in-person test. By inputting a weight and reps you actually performed, this MCP runs that data through eight distinct physiological models—like Epley or Brzycki—to give you a range of estimated one-rep maximums. You can also generate full training intensity charts (50% to 100%) and pinpoint which formula best matches your current lifting volume.

A+ Quality Score 100/100

1rm | strength | weightlifting | fitness-tracking | powerlifting

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vinkius.com/mcp/one-rep-max-calculator-1

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.

One-Rep Max Calculator MCP

3 tools available
Cloud-hosted on Vinkius

Calculating your true strength baseline is key, but attempting a real one-rep max test in the gym carries risk. This MCP solves that problem by letting you estimate your theoretical maximum using data from sets you already completed. You simply tell your agent what weight you lifted and how many reps it took. It then calculates estimates across eight different established formulas—everything from Epley to Wathan. Beyond just a number, it helps you structure your training by generating percentage-based intensity tables for any given 1RM. If you're building out an AI knowledge base, this MCP is one of the best tools to include in your Vinkius catalog because it gives coaches and athletes quantifiable data points that improve planning and safety.

Core Capabilities

01 — Calculate Estimated One-Rep Maxima

Run a set of weights and reps through eight different formulas (including Epley, Brzycki, etc.) to get multiple estimates for your theoretical 1RM.

02 — Generate Training Intensity Charts

Create detailed training tables that map percentage benchmarks from 50% up to 100% of a known maximum lift.

03 — Identify Optimal Formulas for Volume

Determine which estimation formula provides the most accurate and reliable baseline based on your current rep range and training volume history.

One Click on Vinkius — From Prompt to Execution

Available at **vinkius.com/mcp/one-rep-max-calculator-1** — connect your AI agent in three steps.

01 Input a specific weight lifted and the number of repetitions you completed.

02 The MCP runs this data through all eight available formulas to generate a comprehensive set of theoretical one-rep max estimates.

03 You can then request a training intensity chart or use an analysis tool to see which formula gives the most reliable estimate for your goals.

The bottom line is, you give it concrete workout data (weight and reps), and it spits out multiple calculated strength metrics and structured training guidelines.

Built For

This MCP is essential for athletic coaches, powerlifters, and fitness trainers who need objective, repeatable methods to track progress without putting their clients at risk. It helps move planning away from guesswork and into quantified physiological science.

Personal Trainer

You use this MCP to take a client's recent workout data (e.g., 10 reps at 80kg) and calculate a safe, reliable estimated 1RM for programming the next session.

Strength Coach

You need to compare multiple formulas (like Brzycki vs. Epley) on a client's data set to advise them on which model best represents their unique lifting style and recovery rate.

Athlete/Powerlifter

You input your own recent workout stats and generate percentage tables for specific goals, like setting up a structured training cycle that hits 85% intensity safely.

What Changes When You Connect

01 Safety first. Instead of attempting a dangerous, maximal test in the gym, you get estimated 1RM numbers using `calculate_all_1rm_formulas` on data you already have.

02 Detailed programming. Use `get_perc_table` to instantly generate structured training intensity charts for any weight class, eliminating manual spreadsheet work.

03 Better advice. The MCP doesn't just give a number; it uses `identify_best` to tell you which formula—like Wathan or Lombardi—is mathematically best suited for your current rep range.

04 Time savings. You skip the guesswork of converting sets and reps into usable data, getting multiple estimates in seconds.

05 Client confidence. Coaches can use these reliable, quantified metrics to prove their programming methods are based on physiological science.

Real-World Applications

A client needs a 1RM estimate after an injury layoff

The trainer inputs the client's last successful weight and reps. The agent uses `calculate_all_1rm_formulas` to provide not just one number, but a range of estimates (e.g., Epley vs. Brzycki), giving the coach a safer, informed starting point for rehabilitation programming.

Designing a periodized strength block

The athlete needs to hit 80% intensity next month. They ask their agent to generate a training chart using `get_perc_table` based on their current estimated max, giving them concrete weights for every single session.

Deciding the best metric for a new lifter

The coach is unsure if Epley or Lombardi works better for beginners. They ask the agent to run `identify_best` using 8 repetitions of data, and the MCP recommends Wathan because it accounts for higher volume fatigue factors.

Benchmarking progress across different lifting styles

The athlete switches from heavy low-rep squatting to medium-rep deadlifts. They feed in two different sets of data, and the agent uses `calculate_all_1rm_formulas` to compare how each formula weights those differing volume patterns.

Patterns to Avoid

Guessing 1RM based on a single set

✗ AVOID

A user just estimates their max lift by multiplying the weight they lifted last week by 1.2, which is pure guesswork and ignores physiological variance.

✓ INSTEAD

Instead of guessing, input the actual weights and reps into `calculate_all_1rm_formulas`. This runs your data through eight proven models and provides a scientifically backed range, not a single guess.

Forgetting to plan for intensity drop-off

✗ AVOID

A coach writes out training guidelines manually in a spreadsheet but forgets to calculate the required weight when dropping from 100% down to 65%.

✓ INSTEAD

Use `get_perc_table`. Simply give it your target max, and it instantly generates an organized chart showing exactly what weights you need for every percentage level.

Using the wrong formula for high volume work

✗ AVOID

A coach uses a low-rep focused model like Brzycki when programming for high-volume back-off sets, leading to overestimation and potential injury.

✓ INSTEAD

Use `identify_best`. It analyzes your specific rep count—like 8 reps—and recommends a formula (such as Wathan) that accounts for the fatigue associated with higher volume.

The Right Fit

You should use this MCP if you need to calculate multiple, scientifically supported estimates of one-rep max based on actual performance data. If your goal is simply 'I want a number,' this tool provides necessary depth by running eight distinct models and allowing you to determine the best fit using `identify_best`. Don't use it if you are trying to track highly subjective metrics (like perceived effort) or if you need real-time, in-gym feedback. For those scenarios, manual observation is still needed. This tool excels when you have historical workout data and need to build structured, quantified training plans using the percentage charts provided by `get_perc_table`.

Using One-Rep Max Calculator for Strength Training Programming

Right now, planning a strength cycle means tracking sets and reps manually. You're looking at old workout logs, cross-referencing them with online charts to figure out what 75% of your max lift actually is. It takes minutes of copy/pasting data into spreadsheets just to build a basic weekly template.

With the One-Rep Max Calculator MCP, you don't do that work anymore. You feed it your workout history and instantly get multiple calculated estimates for your 1RM. The output gives you immediate, structured weights across all intensity levels.

One-Rep Max Calculator for Analyzing Lifting Volume Data

A common trap is assuming one formula works best for everyone. You might use a model designed for heavy, low-rep lifts when your client's training pattern involves high volume, moderate reps.

The MCP addresses this by running `identify_best`. It looks specifically at the number of repetitions you entered and recommends an optimal formula—like Wathan or Mayhew—that accounts for the specific fatigue factors inherent

in that workout style. That’s how you build a truly accurate baseline.

One-Rep Max Calculator: 3 Tools for Strength Training Analysis

Use these tools to calculate theoretical one-rep maximums, build intensity charts, and find the best formula based on your performance data.

#	TOOL	DESCRIPTION
01	`calculate_all_1rm_formulas`	Runs your input through all eight distinct mathematical models to estimate theoretical one-rep maximums.
02	`get_perc_table`	Creates a complete training intensity reference chart, mapping weights from 50% up to 100% of an estimated max lift.
03	`identify_best`	Analyzes your specific rep range and recommends the most accurate estimation formula for reliable programming.

See It in Action

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

U I did 120kg for 5 reps last week. What's my estimated 1RM?

Estimated 1-Rep Maxima based on 120kg x 5 Reps:

- **Epley Formula:** ~144 kg
- **Brzycki Formula:** ~138.5 kg
- **Lombardi Formula:** ~139.2 kg
- **Average (All 8 Models): ~140.3 kg**

This average gives you a solid, conservative number to start programming from.

U Can I generate training weights for my new max of 150kg?

Training Intensity Chart (Based on 150kg Max):

TARGET PERCENTAGE	WEIGHT	SETS X REPS EXAMPLE
60%	90 kg	3 × 8
75%	112.5 kg	4 × 6
90%	135 kg	3 × 3
100%	150 kg	1 × 1

U I did a lot of back-off work (8 reps). Which formula should I trust?

Formula Recommendation:
For a set involving higher volume, like 8 repetitions, the model that accounts for fatigue is most reliable. In your case, the **Wathan** model performs best because it properly weights the accumulated effort of multiple reps.

Recommendation: Use Wathan or O'Conner.

Frequently Asked Questions

01 **How accurate is the One-Rep Max Calculator for AI Agents?**

It provides a highly reliable *estimate*. It calculates your theoretical max using eight established formulas, so it's excellent for planning and programming, but remember it's not a direct replacement for an in-person test.

02 **What if I need weights for different percentages? Does the One-Rep Max Calculator help with that?**

Yes. You can use its built-in function to generate a full training intensity chart (a percentage table). Just feed it your estimated 1RM, and it spits out exact weights for 50%, 75%, 90%, etc.

03 **Does the One-Rep Max Calculator tell me which formula is best for my training?**

Absolutely. It runs an analysis tool that reviews your specific rep range and tells you whether a high-volume model or a low-volume model (like Epley) will give you the most accurate estimate.

04 **Can I use this MCP for different types of weights, like kettlebells?**

The calculations are designed around standard barbell lifting models. While it's a strength tool, stick to providing data from movements that fit traditional powerlifting or weightlifting protocols.

05 **Is the One-Rep Max Calculator better than just using an online calculator?**

It is much better because it doesn't rely on one model. It runs your data through eight different, peer-reviewed formulas and lets you compare them all side-by-side to make the most informed decision.

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 `"one-rep-max-calculator-1": { "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

One-Rep Max 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 →

vinkius.com · support@vinkius.com

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