

M C P S E R V E R

N O C O D E

C L O U D H O S T E D

Kicker Transition Radius Calculator MCP

Build safer jumps with precise physics-based geometry.

Kicker Transition Radius Calculator provides engineering-grade calculations for snow sports jump design. Your AI client uses physics models to determine transition radii, takeoff angles, and landing distances while accounting for rider weight and snow conditions. It connects directly to Claude, Cursor, Windsurf, and VS Code through Vinkius.

A+ Quality Score 100/100

snowboarding

skiing

jump-building

physics-calculator

snow-sports



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.

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.

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.

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

Encryption at rest

Ed25519

PKI vault signatures

24h TTL

Ephemeral session keys

V8 Isolate

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.

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.

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.

06 — Honeypot Trap System

Phantom credentials are injected into isolated environments. If a honeypot 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.

FinOps

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

Firewall & DLP

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

Agent Activity

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

Tool Health

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

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.

Kicker Transition Radius Calculator MCP

4 tools available

Cloud-hosted on Vinkius

You can use this MCP to take the guesswork out of jump building. Instead of relying on intuition, you give your AI agent the ability to run real-world physics simulations for snow sports. Whether you are designing a permanent park feature or a temporary backcountry kicker, the math needs to be right to keep riders safe.

You can feed your agent specific variables like approach speed, rider mass, and surface type to get immediate feedback on jump viability. It handles the heavy lifting of calculating how a specific radius will impact a rider's body through G-forces or how much distance they will actually clear. It is a specialized tool for anyone who needs to bridge the gap between a rough idea and a mathematically sound jump design.

Core Capabilities

01 — Geometry Planning

Your agent calculates the necessary dimensions to reach a specific landing spot.

02 — Force Analysis

The AI predicts the G-forces a rider will feel during the transition.

03 — Surface Compensation

The tool adjusts math for powder or hard-pack snow conditions.

04 — Safety Auditing

Your agent evaluates if a design meets safety requirements for specific rider profiles.

One Click on Vinkius — From Prompt to Execution

Available at vinkius.com/en/ai-agent-connect/kicker-transition-radius-calculator — connect your AI agent in three steps.

- 01 Connect your client like Claude or Cursor to Vinkius.
- 02 Provide your agent with rider weight, speed, and target distance.
- 03 The agent calls the specific physics tools to run the math.
- 04 You receive precise geometric and force data in your chat window.

Connect your AI client to Vinkius to start running physics calculations immediately.

Built For

This MCP is built for professionals and enthusiasts who need mathematical certainty in snow sports design.

Jump Builders

They hand off design specs to the AI to verify dimensions and safety.

Snow Park Designers

They use the agent to model how different radii affect rider impact.

Snow Sports Engineers

They use the physics models to validate complex jump geometries.

What Changes When You Connect

- 01 Reduces physical risk by predicting peak G-forces before a jump is built.
- 02 Accounts for real-world variables like snow density and rider weight.

-
- 03 Provides specific geometric dimensions for target landing distances.
-
- 04 Works directly within your existing coding or chat environments.
-

Real-World Applications

Backcountry Kicker Design

Calculate a safe radius for a quick build based on your current speed.

Force Impact Prediction

Determine if a transition radius will cause excessive G-forces at high speeds.

Snow Park Safety Checks

Run a safety profile on a new feature to see if it's too aggressive for certain riders.

Snow Condition Adjustments

Modify your jump math when moving from hard-pack to powder snow.

4 Tools Available

#	TOOL	DESCRIPTION
01	adjust_for_snow_conditions	This tool modifies theoretical geometry and force calculations based on the specific snow surface, such as powder or hard-pack.
02	analyze_rider_forces	This tool calculates the physical impact and G-forces a rider will experience during the transition.
03	calculate_transition_geometry	This tool determines the primary geometric properties needed to hit a specific target landing distance.
04	get_safety_profile	This tool evaluates if a specific kicker design is safe for a given rider weight and approach speed.

See It in Action

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

- U** Calculate the jump geometry for an approach speed of 10 m/s, a rider weight of 75 kg, a target landing distance of 15 meters, and a takeoff angle of 30 degrees.



The calculated transition radius is 8.45 meters with a flight time of 1.2 seconds.

- U** What are the expected G-forces for a transition with a radius of 5 meters at 12 m/s for a 70 kg rider?



The peak G-force is 3.89 Gs with a total force of 261.5 Newtons.

- U** Is a jump with a 4.5 G-force safe for a 80 kg rider with a 6 meter radius?



The risk level is High. It is advised to increase the transition radius to reduce peak G-forces.

Frequently Asked Questions

01 What AI clients can I use with this MCP?

You can use it with Claude Desktop, Cursor, Windsurf, and VS Code.

02 Does this account for different snow types?

Yes, you can use the `adjust_for_snow_conditions` tool to account for powder or hard-pack surfaces.

03 Can I check if a jump is too dangerous?

Yes, the `get_safety_profile` tool evaluates if a design is safe for a specific rider and speed.

04 How does it calculate G-forces?

The analyze_rider_forces tool uses physics-based models to predict the physical impact on the rider.

05 Do I need to host this myself?

No, Vinkius hosts and manages the MCP so it is ready to use once you connect.

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 <code>"kicker-transition-radius-calculator": { "url": "..."} </code>
 Windsurf	MCP Settings → <code>mcp_settings.json</code> → 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

Kicker Transition Radius 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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DOCUMENT INFORMATION

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Server ID	01a09e24-5c99-70b8-819b-0327bdc12b42
Platform	Vinkius Cloud for AI Agents
Endpoint	https://edge.vinkius.com/{token}/mcp

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