

MuscleMap

Technical Documentation

Version 1.0.0

MuscleMap Development Team

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Visual Workout Tracking

<https://musclemap.me>

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Part I

Introduction

1 About MuscleMap

MuscleMap is a cross-platform fitness tracking application that visualizes muscle activation in real-time. The platform helps users understand which muscles they're targeting during workouts, enabling more effective training.

1.1 Key Features

- **3D Muscle Visualization:** See exactly which muscles are being worked
- **Workout Tracking:** Log exercises, sets, reps, and weights
- **Progress Analytics:** Track your fitness journey over time
- **Community Features:** Compete, connect, and motivate
- **Cross-Platform:** Web, iOS, and Android

1.2 Technology Highlights

- React + Vite for blazing-fast web experience
- React Native + Expo for native mobile apps
- Fastify API with TypeScript
- PostgreSQL for reliable data storage
- Three.js for 3D muscle rendering

Part II

Architecture

2 Overview

MuscleMap is a cross-platform fitness tracking application with real-time muscle visualization. The architecture follows a modular, layered approach with clear separation of concerns.

2.1 Design Principles

- **Single Source of Truth:** PostgreSQL is the only data store
- **Cross-Platform:** One codebase serves web and mobile
- **Modular:** Clear package boundaries
- **Type-Safe:** TypeScript throughout

Layer	Technology	Purpose
Frontend Web	React + Vite + TailwindCSS	Single-page application
Frontend Mobile	React Native + Expo	iOS & Android apps
API Server	Fastify + TypeScript	REST/GraphQL API
Database	PostgreSQL	Primary data store
Cache	Redis (optional)	Session/query caching
Reverse Proxy	Caddy	HTTPS termination

Table 1: Technology Stack

3 Technology Stack

4 Packages

The monorepo contains 5 packages:

Package	Description
@musclemap/client	Shared client-side business logic for MuscleMap
@musclemap/core	Shared domain types and utilities for MuscleMap
@musclemap/plugin-sdk	SDK for building MuscleMap plugins
@musclemap/shared	Shared utilities and constants for MuscleMap apps
@musclemap/ui	Shared cross-platform UI components for MuscleMap

Table 2: Monorepo Packages

5 Frontend Pages

The application contains 34 pages:

Page	Protected	Description
AdminControl	No	AdminControl page
AdminIssues	Yes	Admin Issues Page Admin dashboard for m
CommunityDashboard	Yes	CommunityDashboard Page Comprehensive c
Competitions	No	Competitions page
Credits	No	Credits page
Dashboard	Yes	Dashboard - MuscleMap Liquid Glass Desig
Design	No	Design Page Showcases MuscleMap's desig
DesignSystem	No	Design System Showcase Demonstrates the
DevUpdates	No	Dev Updates Page Development updates, a
Docs	No	Docs page
Exercises	No	Exercises page
Features	No	Features Page Showcases MuscleMap featu
HighFives	No	HighFives page
IssueDetail	Yes	Issue Detail Page Single issue view wit
Issues	Yes	Issues Page Bug and issue tracker with:
Journey	Yes	Journey page
Landing	No	Landing page
Locations	No	Locations page
Login	Yes	Login page

Page	Protected	Description
Messages	No	Messages page
MyIssues	Yes	My Issues Page User's submitted issues:
NewIssue	Yes	New Issue Page Create a new bug report,
Onboarding	Yes	Onboarding page
Privacy	No	Privacy Policy Page Required for App St
Profile	Yes	Profile page
Progression	No	Progression page
Roadmap	No	Roadmap Page Public roadmap showing: -
Science	No	Science Page Explains the science behin
Settings	No	Settings page
Signup	Yes	Signup page
SkinsStore	No	SkinsStore page
Technology	No	Technology Stack Page Showcases MuscleM
Wallet	No	Wallet page
Workout	No	Workout page

Table 3: Frontend Pages

6 API Endpoints

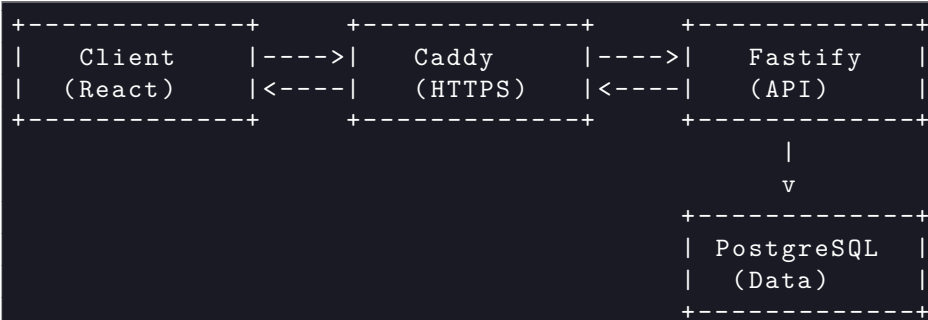
The API exposes 112 endpoints:

Method	Path	Handler
GET	/__routes	misc
GET	/admin/issues	issues
POST	/admin/issues/bulk	issues
GET	/alternatives/low-impact	misc
GET	/alternatives/seated	misc
GET	/archetypes	journey
GET	/archetypes/:id/levels	journey
POST	/archetypes/select	journey
POST	/auth/login	auth
GET	/auth/me	auth
GET	/auth/me/capabilities	auth
POST	/auth/register	auth
GET	/community/feed	community
GET	/community/monitor	community
GET	/community/percentile	community
GET	/community/presence	community
POST	/community/presence	community
GET	/community/stats	community
GET	/community/ws	community
GET	/competitions	misc
GET	/competitions/:id	misc
GET	/credits/balance	economy
GET	/economy/actions	economy
GET	/economy/balance	economy
POST	/economy/charge	economy

Method	Path	Handler
GET	/economy/history	economy
GET	/economy/pricing	economy
GET	/economy/transactions	economy
GET	/economy/wallet	economy
GET	/entitlements	misc

Table 4: API Endpoints

7 Data Flow



8 Build Process

```

# Build order
pnpm build:packages # shared -> core -> plugin-sdk -> client -> ui
pnpm build:api      # API server
pnpm build          # Frontend (Vite)

# Full deployment
./deploy.sh "commit message"

```

9 Scripts

Part III

API Reference

10 Overview

10.1 Base URLs

- Production: <https://musclemap.me/api>
- Development: <http://localhost:3001>

10.2 Authentication

Most endpoints require authentication via JWT token:

Script	Description
deploy-branch.sh	# deploy-branch.sh - Full deployment: commit, push
deploy.sh	Deployment helper for MuscleMap
errors.sh	errors.sh
generate-docs.cjs	MuscleMap Documentation Generator Analyzes the co
generate-icons.cjs	App Icon Generator for MuscleMap Mobile App Gener
logs.sh	Unified Log Viewer for MuscleMap
maintain.sh	— preflight —
merge-all.sh	# merge-all.sh - Merge all worktree branches into
prepare-app-store.cjs	MuscleMap App Store Preparation Script Automates
production-deploy.sh	# production-deploy.sh - Deploy script for MuscleM
publish-app.sh	# MuscleMap App Publishing Script
repo-cleanup.sh	If caller sets DRY_RUN/APPLY explicitly, we do not
reset-devbox.sh	— toggles (set by menu) —
test.sh	Create a competition to get an ID (avoid hardcoded
tidy-root-js.sh	Collect file basenames referenced by systemd units

Table 5: Available Scripts

```
Authorization: Bearer <token>
```

10.3 Response Format

10.3.1 Success Response

```
{
  "success": true,
  "data": { ... }
}
```

10.3.2 Error Response

```
{
  "success": false,
  "error": {
    "code": "ERROR_CODE",
    "message": "Human-readable message"
  }
}
```

11 Endpoints

11.1 Misc

11.2 Issues

11.3 Journey

11.4 Auth

11.5 Community

Method	Endpoint
GET	/__routes
GET	/alternatives/low-impact
GET	/alternatives/seated
GET	/competitions
GET	/competitions/:id
GET	/entitlements
GET	/exercises
GET	/exercises/:id/activations
POST	/highfives/send
GET	/highfives/stats
GET	/highfives/users
GET	/i18n/languages
GET	/locations/nearby
GET	/me/entitlements
GET	/muscles
GET	/progress/stats
GET	/progression/achievements
GET	/progression/leaderboard
GET	/progression/mastery-levels
GET	/settings
PATCH	/settings
GET	/settings/themes
POST	/trace/frontend-log

11.6 Economy

11.7 Hangouts

11.8 Messaging

11.9 Tips

11.10 Prescription

11.11 Stats

11.12 Workouts

12 Rate Limiting

- **Authenticated:** 100 requests/minute
- **Unauthenticated:** 20 requests/minute

13 Health Check

```
curl https://musclemap.me/health
```

Method	Endpoint
GET	/admin/issues
POST	/admin/issues/bulk
GET	/issues
POST	/issues
GET	/issues/:id
PATCH	/issues/:id
GET	/issues/:id/comments
POST	/issues/:id/comments
POST	/issues/:id/subscribe
POST	/issues/:id/vote
POST	/issues/:issueId/comments/:commentId/solution
GET	/issues/labels
GET	/issues/stats
GET	/me/issues
GET	/roadmap
POST	/roadmap
POST	/roadmap/:id/vote
GET	/updates
POST	/updates

Method	Endpoint
GET	/archetypes
GET	/archetypes/:id/levels
POST	/archetypes/select
GET	/journey
GET	/journey/progress

Part IV

Features

14 Overview

MuscleMap is a comprehensive fitness platform with 34 pages/features. This document describes the key features and capabilities.

15 Core Features

15.1 Real-Time Muscle Visualization

- 3D muscle model using Three.js
- Color-coded muscle activation display
- Interactive body part selection
- Anatomically accurate muscle groups

Method	Endpoint
POST	/auth/login
GET	/auth/me
GET	/auth/me/capabilities
POST	/auth/register
GET	/profile
PUT	/profile
Method	Endpoint
GET	/community/feed
GET	/community/monitor
GET	/community/percentile
GET	/community/presence
POST	/community/presence
GET	/community/stats
GET	/community/ws

15.2 Workout Tracking

- Log exercises with sets, reps, weight
- Timer for rest periods
- Progress tracking over time
- Exercise history and statistics

15.3 Exercise Library

- 500+ exercises with detailed instructions
- Muscle group targeting information
- Equipment requirements
- Difficulty ratings

16 Community Features

16.1 Social Integration

- Leaderboards and competitions
- High-five system for encouragement
- Direct messaging between users
- Activity feed and social sharing

16.2 Location Services

- Gym finder with map integration
- Check-in system
- Nearby workout partners

Method	Endpoint
GET	/credits/balance
GET	/economy/actions
GET	/economy/balance
POST	/economy/charge
GET	/economy/history
GET	/economy/pricing
GET	/economy/transactions
GET	/economy/wallet
Method	Endpoint
POST	/hangouts
GET	/hangouts/:id
POST	/hangouts/:id/join
POST	/hangouts/:id/leave
GET	/hangouts/:id/members
POST	/hangouts/:id/posts
GET	/hangouts/:id/posts
GET	/hangouts/nearby
GET	/hangouts/stats
GET	/hangouts/types
GET	/me/hangouts

17 Gamification

- XP and leveling system
- Achievements and badges
- Character stats (RPG-style)
- Skins and avatar customization
- Virtual currency (credits)

18 Technical Features

18.1 Icon System

The application uses a unified icon system combining:

- Lucide React (1,000+ general UI icons)
- Phosphor Icons (7,000+ fitness-focused icons)
- DiceBear (programmatic avatar generation)
- Custom fitness icons (muscle groups, equipment)

18.2 Design System

- Liquid Glass aesthetic
- Dark mode optimized

Method	Endpoint
POST	/messaging/block/:userId
DELETE	/messaging/block/:userId
GET	/messaging/conversations
POST	/messaging/conversations
GET	/messaging/conversations/:id/messages
POST	/messaging/conversations/:id/messages
POST	/messaging/conversations/:id/read
DELETE	/messaging/messages/:id
GET	/messaging/ws

Method	Endpoint
GET	/milestones
POST	/milestones/:id/claim
POST	/milestones/:id/progress
GET	/tips
POST	/tips/:id/seen

- Brand colors: Electric Blue (#0066FF), Pulse Magenta (#FF3366)
- Responsive design for all devices

19 Mobile App

The React Native mobile app provides:

- Native iOS and Android experience
- HealthKit/Google Fit integration
- Push notifications
- Offline workout logging
- Biometric authentication

20 Pages Reference

Page	Auth	Description
AdminControl	No	AdminControl page
AdminIssues	Yes	Admin Issues Page Admin dashboard for managing issues: <ul style="list-style-type: none"> - View all issues (including private) - Change status, priority, assignee - Bulk actions - Create dev updates - Manage roadmap /

Page	Auth	Description
CommunityDashboard	Yes	CommunityDashboard Page Comprehensive community dashboard with: - Real-time activity feed - Geographic map view - Statistics dashboard - Monitoring panel (for mods/admins) - Privacy settings /
Competitions	No	Competitions page
Credits	No	Credits page
Dashboard	Yes	Dashboard - MuscleMap Liquid Glass Design A comprehensive, modern dashboard using the liquid glass design system inspired by visionOS and iOS 18 spatial computing aesthetics
Design	No	Design Page Showcases MuscleMap's design system with links to the interactive design system page
DesignSystem	No	Design System Showcase Demonstrates the MuscleMap Liquid Glass design system components
DevUpdates	No	Dev Updates Page Development updates, announcements, and changelog: - Release notes - Bug fixes - Feature announcements /
Docs	No	Docs page
Exercises	No	Exercises page
Features	No	Features Page Showcases MuscleMap features with VGA-style graphics, charts, and bars
HighFives	No	HighFives page
IssueDetail	Yes	Issue Detail Page Single issue view with: - Full issue details - Comments thread - Voting and subscription - Status history /
Issues	Yes	Issues Page Bug and issue tracker with: - Issue listing with filters - Search functionality - Voting system - Status badges /
Journey	Yes	Journey page
Landing	No	Landing page
Locations	No	Locations page
Login	Yes	Login page
Messages	No	Messages page
MyIssues	Yes	My Issues Page User's submitted issues: - View status of reported issues - Track responses /

Page	Auth	Description
NewIssue	Yes	New Issue Page Create a new bug report, feature request, or other issue: - Form with validation - Auto-capture browser/device info - Screenshot upload - Label selection /
Onboarding	Yes	Onboarding page
Privacy	No	Privacy Policy Page Required for App Store submission
Profile	Yes	Profile page
Progression	No	Progression page
Roadmap	No	Roadmap Page Public roadmap showing: - Planned features - In progress work - Completed features - Voting on priorities /
Science	No	Science Page Explains the science behind MuscleMap's Training Units and muscle activation system
Settings	No	Settings page
Signup	Yes	Signup page
SkinsStore	No	SkinsStore page
Technology	No	Technology Stack Page Showcases MuscleMap's technology architecture with VGA-style graphics
Wallet	No	Wallet page
Workout	No	Workout page

Table 6: All Application Pages

Part V

Appendix

21 Links

- Website: <https://musclemap.me>
- GitHub: <https://github.com/jeanpaulniko/musclemap>
- API Health: <https://musclemap.me/health>

22 Contact

For support or inquiries: support@musclemap.me

Method	Endpoint
GET	/prescription/:id
POST	/prescription/generate
POST	/v1/prescription/generate

Method	Endpoint
GET	/stats/history
GET	/stats/info
GET	/stats/leaderboards
GET	/stats/leaderboards/me
GET	/stats/me
GET	/stats/profile/extended
PUT	/stats/profile/extended
POST	/stats/recalculate
GET	/stats/user/:userId

Method	Endpoint
POST	/workout/complete
POST	/workouts
GET	/workouts/:id
GET	/workouts/me
GET	/workouts/me/muscles
GET	/workouts/me/stats
POST	/workouts/preview