PraxisForma Product Requirements Document (PRD)

1. Executive Summary

Product Name: PraxisForma
Product Vision: To democratize elite-level athletic coaching through AI-powered biomechanical analysis, making expert coaching accessible to every youth athlete regardless of geography, income, or team funding.

Core Value Proposition: PraxisForma transforms any smartphone into a world-class biomechanics lab, providing instant expert-level feedback on athletic movement patterns through sport-specific AI coaching bots.

2. Product Overview

2.1 What We're Building

PraxisForma is a mobile-first AI coaching platform that analyzes uploaded videos of athletic movements and delivers:

- **Proprietary Scoring Systems:** PowerQuotient Score (PQS) for throwing, LiftQuotient Score (LQS) for strength training, and future sport-specific quotient scores
- **AI-Generated Coaching:** Personalized improvement plans, drill suggestions, and technique corrections
- **Progress Tracking:** Long-term athlete development monitoring with privacy-preserved data
- **Coach Integration:** Tools for human coaches to amplify their impact and manage multiple athletes

2.2 Target Users

Primary Users:

- **Youth Athletes (Ages 12-18):** Individual subscribers seeking to improve technique and performance
- **High School/Middle School Coaches:** Managing teams and individual athlete development
- **PE Teachers:** Incorporating biomechanical feedback into curriculum
- **Club Sport Coaches:** Private coaching organizations and athletic clubs

Secondary Users:

- **Parents:** Supporting their child athlete's development and safety
- **Athletic Directors:** Overseeing school sports programs and technology adoption

- **Private Trainers:** Independent coaches working with multiple athletes

3. Market Problem & Opportunity

3.1 Current Pain Points

- **Limited Expert Access:** 80% of youth athletes never receive biomechanical analysis
- **Injury Risk:** Poor form leads to preventable injuries that end athletic careers
- **Geographic Inequality:** Quality coaching concentrated in affluent areas with elite programs
- **Cost Barriers:** Professional biomechanical analysis costs $200-500 per session
- **Inconsistent Feedback:** Human coaches cannot observe every repetition or provide instant corrections
- **Lack of Objective Metrics:** Subjective feedback without data-driven improvement tracking

3.2 Market Opportunity

- **Youth Sports Market:** $38-50 billion globally, growing 6.7-10.7% CAGR
- **Sports Technology:** $18.85 billion in 2024, projected $61.7 billion by 2030
- **Target Addressable Market:** 45+ million youth athletes in organized sports
- **Underserved Segment:** Individual athletes and smaller programs priced out of enterprise solutions

4. Product Goals & Success Metrics

4.1 Primary Goals

1. **Democratize Access:** Make elite-level biomechanical coaching accessible at smartphone scale
2. **Injury Prevention:** Reduce training-related injuries through proper form education
3. **Performance Enhancement:** Measurably improve athletic performance through data-driven feedback
4. **Coach Amplification:** Enhance human coaching effectiveness rather than replacing coaches

4.2 Success Metrics

User Acquisition:

- 10,000+ individual subscribers within Year 1
- 100+ school/club partnerships within 18 months
- 50% month-over-month growth in video uploads

Engagement & Retention:

- 85%+ monthly retention rate for individual users
- 95%+ annual retention rate for institutional customers
- Average 8+ video uploads per user per month

Impact Metrics:

- 15%+ average improvement in sport-specific scores within 30 days
- 25% reduction in form-related injury reports among users
- 90%+ user satisfaction scores on coaching quality

Business Metrics:

- $1M ARR within 24 months
- <$50 customer acquisition cost for B2C
- 3:1+ lifetime value to acquisition cost ratio

5. Core Features & Functionality

5.1 Modular Bot Architecture

ThrowPro (Shot Put & Discus):

- PowerQuotient Score (PQS) analysis ranging 0-100
- Release angle, velocity, and power transfer optimization
- Footwork and rotational technique feedback
- Competition preparation and peak performance protocols

LiftPro (Strength Training):

- LiftQuotient Score (LQS) for major compound movements
- Form safety analysis with injury risk alerts
- Progressive overload recommendations
- Movement pattern optimization for sport-specific performance

Future Sport Bots:

- SprintBot: Sprint mechanics and speed development
- LaunchBot: Jumping and plyometric analysis
- SwingBot: Golf, baseball, tennis swing analysis
- Additional bots based on market demand and technical feasibility

5.2 Core Platform Features

Video Analysis Engine:

- Computer vision-powered pose detection using Azure AI
- Privacy-first processing with automatic face/body blurring
- Offline analysis capability with cloud sync
- Support for multiple camera angles and lighting conditions

Scoring & Feedback System:

- Sport-specific proprietary scoring algorithms
- Instant numerical scores with detailed breakdowns
- Personalized improvement recommendations
- 7-day progressive training plans

Progress Tracking:

- Historical performance data visualization
- Goal setting and achievement tracking
- Comparative analysis across time periods
- Achievement badges and milestone celebrations

Coach Dashboard:

- Multi-athlete management interface
- Team performance analytics and reporting
- Custom drill assignment and tracking
- Parent/athlete communication tools

5.3 Privacy & Safety Features

Youth Data Protection:

- COPPA and GDPR compliant data handling
- Automatic facial recognition removal
- Local data processing options
- Parental consent and control mechanisms

Safety Prioritization:

- Age-appropriate coaching recommendations
- Conservative progression for youth athletes
- Injury risk assessment and warnings
- Integration with sports medicine best practices

6. Technical Requirements

6.1 Platform Architecture

Mobile-First Design:

- Native iOS and Android applications
- Responsive web dashboard for coaches
- Cross-platform data synchronization
- Offline-first architecture with intelligent sync

AI/ML Infrastructure:

- Azure Computer Vision for pose detection
- Custom biomechanical analysis models
- Real-time video processing pipeline
- Scalable model training and deployment

Data Architecture:

- Privacy-preserving data storage
- Anonymous movement pattern analytics
- Secure multi-tenant database design
- HIPAA-ready infrastructure for future medical integrations

6.2 Performance Requirements

- Video analysis completion within 30 seconds
- 99.5% uptime for critical user flows
- Support for 1080p video analysis
- Battery-optimized mobile processing
- Graceful degradation for lower-end devices

6.3 Security Requirements

- End-to-end encryption for all user data
- SOC 2 Type II compliance
- Regular third-party security audits
- Zero-trust architecture implementation
- Incident response and data breach protocols

7. User Experience & Design

7.1 Core User Flows

Athlete Upload Flow:

1. Select sport and specific movement type
2. Record or upload video (guided recording tips)
3. Automatic analysis with real-time progress indicator
4. Receive scored feedback with visual overlays
5. Access personalized improvement plan and drills
6. Track progress over time with comparative analytics

Coach Management Flow:

1. Create team/group and invite athletes
2. Assign specific movements and goals
3. Review athlete analyses and progress
4. Provide additional coaching notes and guidance
5. Generate team performance reports
6. Communicate with athletes and parents

7.2 Design Principles

- **Simplicity First:** Intuitive interface accessible to all technical skill levels
- **Motivational Design:** Encouraging, positive feedback presentation
- **Coach-Friendly:** Familiar workflow patterns for coaching professionals
- **Youth-Appropriate:** Age-appropriate language and interaction patterns
- **Data Visualization:** Clear, actionable insights from complex biomechanical data

8. Revenue Model & Pricing

8.1 Individual Athlete Subscriptions (B2C)

Basic Plan - $5/month:

- AI analysis for one sport bot
- Basic scoring and feedback
- Personal progress tracking
- Community access

Pro Plan - $15/month:

- Access to all sport bots
- Advanced analytics and trends
- Video comparison tools
- Priority customer support

Elite Plan - $25/month:

- Everything in Pro
- Weekly human coach review
- Personalized training programs
- Direct messaging with certified coaches

8.2 Institutional Licensing (B2B)

Public Schools - $50/student/year:

- Full platform access for all students
- Coach dashboard and reporting
- Bulk video analysis capabilities
- Professional development for coaching staff

Private Schools/Clubs - $200/student/year:

- All public school features
- Premium support and training
- Custom branding options
- Advanced analytics and reporting

Enterprise/Districts - Custom Pricing:

- Multi-school deployment
- Integration with existing systems
- Dedicated customer success management
- Custom feature development

9. Go-to-Market Strategy

9.1 Launch Strategy

Phase 1 (Months 1-6): Foundation

- Launch ThrowPro for track and field community
- Partner with 5-10 throwing coaches for initial validation
- Build core iOS and Android applications
- Establish foundational user base of 500+ athletes

Phase 2 (Months 7-12): Expansion

- Launch LiftPro for strength training community
- Expand to 100+ coach partnerships
- Introduce school pilot programs
- Scale to 5,000+ individual users

Phase 3 (Months 13-18): Scale

- Launch additional sport bots based on demand
- Establish enterprise sales channel
- International expansion planning
- Target 25,000+ users across all segments

9.2 Customer Acquisition Strategy

B2C Acquisition:

- Social media marketing on athletic platforms
- Influencer partnerships with youth sports coaches
- App store optimization and featured placement

- Referral programs and viral sharing mechanics

B2B Acquisition:

- Direct sales to athletic directors and coaches
- Conference presence at coaching and education events
- Pilot program offerings with success-based pricing
- Partnership with sports equipment and technology vendors

10. Competitive Analysis

10.1 Direct Competitors

Hudl:

- Strengths: Market leader, comprehensive game film analysis
- Weaknesses: Expensive ($400-3,300/year), complex interface, focused on game analysis not technique
- Differentiation: We focus on individual technique improvement vs. team game analysis

OnForm:

- Strengths: Mobile-first, popular with individual coaches
- Weaknesses: Limited AI analysis, basic feedback tools
- Differentiation: Our AI provides expert-level biomechanical insights vs. basic video tools

Coach's Eye (Discontinued):

- Market Gap: No direct replacement for individual coaching analysis
- Opportunity: Capture displaced users seeking mobile coaching tools

10.2 Competitive Advantages

1. **Sport-Specific Intelligence:** Deep biomechanical expertise vs. generic video analysis
2. **Modular Pricing:** Pay for only needed features vs. expensive full platforms
3. **Privacy-First:** Youth-safe design vs. data-heavy enterprise tools
4. **Coach Integration:** Amplifies human coaching vs. attempting replacement
5. **Mobile-Native:** Built for smartphone generation vs. desktop-first legacy tools

11. Technical Implementation Roadmap

11.1 MVP Development (Months 1-6)

- Core mobile application framework
- ThrowPro biomechanical analysis engine
- Basic user authentication and data storage
- Essential coaching feedback delivery system

11.2 Feature Expansion (Months 7-12)

- LiftPro strength training analysis
- Coach dashboard and multi-athlete management
- Advanced progress tracking and analytics
- Payment processing and subscription management

11.3 Scale & Optimization (Months 13-18)

- Additional sport bot development
- Enterprise features and bulk management
- Performance optimization and scaling
- International deployment and localization

12. Risk Assessment & Mitigation

12.1 Technical Risks

Risk: AI analysis accuracy not meeting user expectations **Mitigation:** Extensive testing with certified coaches, conservative accuracy claims, continuous model improvement

Risk: Mobile performance limitations affecting user experience **Mitigation:** Optimize for lower-end devices, provide cloud processing fallbacks, staged feature rollouts

12.2 Market Risks

Risk: Low adoption due to coaching culture resistance to technology **Mitigation:** Coach-first approach, extensive training and support, emphasis on amplifying vs. replacing

Risk: Competition from established players (Hudl, etc.) **Mitigation:** Focus on underserved segments, rapid feature development, strong IP protection

12.3 Business Risks

Risk: Customer acquisition costs exceeding lifetime value **Mitigation:** Focus on organic growth, referral programs, high-retention feature development

Risk: Regulatory challenges around youth data and AI **Mitigation:** Privacy-first design, legal compliance from day one, conservative data practices

13. Success Criteria & Validation

13.1 Product-Market Fit Indicators

- 40%+ of trial users convert to paid subscriptions
- 85%+ monthly retention rate for paying users
- Net Promoter Score above 70
- Organic growth rate exceeding 20% monthly

13.2 Validation Checkpoints

Month 3: 100+ active users providing consistent feedback **Month 6:** First paying customers and revenue generation **Month 12:** Product-market fit validation and scaling preparation **Month 18:** Sustainable business model and expansion readiness

14. International Expansion Strategy

14.1 Portugal/EU Market Entry

Timeline: Months 18-24 following domestic validation **Approach:** D2 visa establishment for EU market access **Localization:** Multi-language support, European sports focus **Compliance:** GDPR-native design, European youth protection standards

14.2 Global Scalability

Architecture: Multi-region deployment capability **Partnerships:** Local coaching organizations and sports federations **Customization:** Region-specific sports and training methodologies **Support:** Localized customer success and coaching expertise

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