



## NRAI Job Title

### Two Sports Biomechanics Experts (Olympic Shooting – High Performance Program)

#### Organization

#### National Rifle Association of India (NRAI) – High Performance Program

#### Role Purpose

The Sports Biomechanics Expert will lead the biomechanical assessment and performance-optimization support for elite rifle, pistol, and shotgun athletes within the NRAI Olympic Shooting High Performance Program. The role focuses on improving repeatability, stability, movement efficiency, and injury resilience by translating biomechanical data into practical, coach-friendly interventions and athlete-ready cues—aligned with the program's performance goals through LA 2028.

#### Reporting & Collaboration

- **Reports to:** High Performance Director (HPD) /
- **Works closely with:** National Coaches, Strength & Conditioning, Physiotherapy/Medical, Sport Psychology, Nutrition, Data/Analytics, Equipment/Armoury staff, and external technology partners

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#### Key Responsibilities

##### 1) Athlete Biomechanics Support (Daily Performance)

- Conduct **technical-biomechanical evaluations** across events (10m/25m/50m; trap/skeet) focusing on:
  - Postural control, stance and alignment, center-of-pressure management
  - Rifle/pistol hold stability, micro-movements, recoil/return (where applicable)
  - Trigger/hand mechanics, grip dynamics, shoulder/arm loading, symmetry
  - Breathing–movement coupling, timing patterns, shot-execution kinematics
- Translate findings into simple performance cues, drills, and progressions usable in daily training and pre-competition routines.

## 2) Instrumentation & Technology Integration

- Design and run measurement protocols using tools such as:
  - High-speed video / 2D–3D markerless motion analysis
  - Force plates / pressure platforms (CoP, sway metrics)
  - IMUs / wearable sensors for segment stability and timing
  - Pressure mapping (grip/foot), EMG (as needed), laser/trace systems (e.g., SCATT), and other relevant technology
- Ensure **reliable data collection**, calibration, and standardized testing conditions.

## 3) Individual Development Plans (IDPs) & Performance Pathways

- Build **athlete-specific biomechanical profiles** and contribute to IDPs with:
  - Priority focus areas (1–3 key biomechanical levers per athlete)
  - Technical constraints and “non-negotiables”
  - Training blocks and measurable targets
- Support transition planning for juniors to seniors and return-to-performance after injury.

## 4) Competition Support & “Performance on Demand”

- Provide competition preparation insights:
  - Pre-event readiness checks (stability markers, fatigue flags)
  - Warm-up structure, posture/hold “tune-up” protocols
  - Competition-day adjustments within coach-approved boundaries
- Assist in building and validating finals-simulation and pressure-condition training from a biomechanical perspective.

## 5) Injury Risk Reduction & Load Management

- Identify mechanical risk factors (overuse patterns, asymmetries, joint stress) in collaboration with physio/medical.
- Recommend preventive programs and technical modifications that reduce injury risk while protecting performance.

## 6) Coach Education & System Development

- Deliver workshops and coach briefings on:
  - “What matters most” biomechanics principles for shooting
  - Interpreting stability/trace metrics and movement signatures
  - Standardized testing batteries and intervention libraries
- Contribute to building an NRAI Biomechanics SOP (testing, reporting templates, data governance, equipment usage).

## 7) Documentation, Reporting, and Data Governance

- Produce clear, concise deliverables:
  - Athlete one-pagers, camp reports, and monthly summaries
  - Video-annotated feedback and drill prescriptions
  - Test-retest dashboards tracking progress
- Maintain strict confidentiality, informed consent, and secure data storage/sharing practices per NRAI policy.

### Deliverables

- Baseline biomechanics screen for all targeted athletes each season
- Camp-by-camp performance reports (key findings + actions)
- IDP biomechanics module per athlete (targets, drills, monitoring plan)
- Standardized testing battery and reference values by discipline
- Coach education sessions (quarterly or per camp cycle)
- Technology integration plan (protocols, workflows, QA checklist)

### Performance Indicators (KPIs)

- Improvement in athlete stability/consistency metrics (e.g., reduced sway/trace dispersion, improved timing consistency)
- Adoption rate of recommended interventions by coaches/athletes
- Injury reduction indicators linked to identified mechanical risks
- Test-retest reliability of biomechanics protocols (quality assurance)
- Competition translation: improved hold/shot execution consistency under pressure (as tracked by performance analytics)

### Required Qualifications

- Postgraduate degree (Master's/PhD preferred) in Biomechanics, Sport Science, Human Movement Science, Kinesiology, or related field
- Demonstrated applied experience in elite/high-performance sport (Olympic/World Championship level desirable)
- Strong competence in motion analysis and athlete monitoring methods
- Ability to communicate complex findings as simple, actionable coaching language

## **Desired Experience (Highly Valued)**

- Direct experience in precision sports (shooting, archery, golf) or sports requiring fine motor control and stability
- Experience working in multi-disciplinary HP environments (S&C, physio, psych, nutrition, data science)
- Familiarity with shooting-specific sport science phases and concepts (pre-preparation preparation, execution, follow-through etc., stance/grip optimization)
- Research and publication track record in relevant applied domains

## **Core Skills & Competencies**

- Applied problem solving in real training environments
- Clear reporting and athlete-friendly education
- High integrity and confidentiality with sensitive performance data
- Comfort working in camps, ranges, and competition environments
- Collaborative mindset with athletes, coaches, sport science staff

## **Work Location & Travel**

- Based primarily at NRAI/SAI designated training centers (KSSR, Delhi)
- Frequent travel for national camps (India/International ISSF events as per program needs)

## **Employment Terms**

- Full-time / contract (as per NRAI hiring norms)
- Compensation commensurate with experience and scope of travel/competition support

## **Application Requirements**

- CV + brief cover letter to the NRAI outlining relevant HP experience
- Portfolio/examples: anonymized reports, analysis or case studies in individual sports
- References from elite sport environments

## **How to Apply**

- Interested candidates may send their application with **resume and achievements** to the NRAI by email at [indiashooting@gmail.com](mailto:indiashooting@gmail.com) (attach NOC if applicable).