Master of Science Kinesiology
San Diego State University

MS in Kinesiology: Biomechanics and Motor Control Career Guide

School of Exercise & Nutritional Sciences · San Diego State University

A research-focused career in Biomechanics and Motor Control can take many forms. This guide shows how graduates apply movement science, laboratory methods, and data analysis across sport, research, clinical, and technology settings.

WHERE CAN I WORK?

Sport
Professional & collegiate teams

Research
Universities, health systems & institutes

Clinical
Rehabilitation research & occupational health

Industry
Wearables, footwear, MedTech & R&D;

WHAT KIND OF JOBS ARE AVAILABLE?

Biomechanist

Employers may be in athletics, apparel, technology, or healthcare.

- Collect and process motion-capture, force-platform, EMG, wearable-sensor, or video data.
- Translate kinematic and kinetic results into reports for researchers, coaches, clinicians, or product teams.
- Develop and validate analysis pipelines; monitor data quality, repeatability, and measurement limitations.

Signature project: Build a pitching-mechanics workflow integrating markerless motion capture and force data to quantify workload-related changes across a competitive season.

Sport Scientist

This role differs from a pure biomechanist because you interact directly with an athletics team and its clinical and coaching staff. This career is fast paced and high pressure!

- Design athlete-monitoring protocols using force plates, GPS/IMUs, jump testing, and training-load data.
- Combine biomechanical, physiological, and performance measures to identify meaningful trends.
- Communicate findings to multidisciplinary performance and sports-medicine staff.

Signature project: Create a force-plate monitoring dashboard that distinguishes typical day-to-day variability from meaningful changes in jump strategy.

Kinesiologist / Movement Science Specialist

Common organizations tend to be health-focused, with an emphasis on improving quality of life rather than elite performance.

- Administer standardized movement, balance, gait, strength, and functional-capacity assessments.
- Document protocols and summarize outcomes for research or program-evaluation teams.
- Support evidence-based movement programs within the scope of the role and organization.

Signature project: Develop a repeatable gait-and-balance assessment battery for a clinical research program and evaluate its reliability across testers.

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WHAT KIND OF JOBS ARE AVAILABLE?

Human Movement Data Analyst

- Clean, organize, and analyze biomechanical or wearable-sensor datasets using MATLAB, R, Python, or similar tools.
- Build reproducible workflows, visualizations, and reports.
- Work with scientists and engineers to define variables, test assumptions, and evaluate model performance.

Signature project: Develop a reproducible pipeline that extracts gait features from IMU data and tests agreement with laboratory motion capture.

Product Development / Validation Scientist

- Plan human-subject testing of prototypes, algorithms, footwear, or sensor-based products.
- Translate user needs and movement-science evidence into measurable design requirements.
- Compare conditions, assess validity and reliability, and communicate findings to design and engineering teams.

Signature project: Design a validation study comparing a prototype running wearable with laboratory force and motion data.

Research Coordinator / Laboratory Manager

- Coordinate recruitment, scheduling, consent, and data-collection sessions.
- Maintain IRB documentation, procedures, equipment calibration, and data-quality standards.
- Train research assistants, manage logistics, and contribute to analyses, presentations, and manuscripts.

Signature project: Coordinate a longitudinal study of movement decision-making after lower-extremity injury, including staff training and data-quality monitoring.

PhD or Professional Program Pathway

- Complete thesis or mentored research demonstrating independent scientific thinking.
- Present findings, contribute to manuscripts, and develop focused questions for advanced study.
- Strengthen quantitative, laboratory, teaching, and professional skills required by the target program.

Signature project: Complete and present a thesis on neuromechanical responses to cognitive load, producing a manuscript-ready study.

COMMON PREPARATION

A strong portfolio may include a thesis or applied research project, clean analysis code, a technical report, an academic poster or manuscript, and examples of communicating complex findings to non-specialists.

A research-focused degree: This concentration prepares students to investigate human movement, manage rigorous research, analyze complex data, and translate findings. Career fit often depends on the methods, research experiences, and technical portfolio a student develops - not the degree title alone.

COMMON JOB TITLES

- Biomechanist
- Lab Coordinator
- Scientific Officer
- Research Scientist
- Applied Scientist
- Performance Innovation Lead
- Human Performance Advisor
- Sport Science Coordinator

Curious where this degree could take you?
https://ens.sdsu.edu/academics/masters/ms-kinesiology