Biometrics in Intercollegiate Athletics

Pam Bruzina
Professor of Nutrition and Exercise Physiology
Faculty Athletics Representative
University of Missouri
Context for Biometrics in Sport

• Age of Big Data and Analytics: Moneyball!

• Improve Sports Organizations
  o Marketing
  o Fan experience
  o Team Performance
    o Player performance
    o In-competition decisions
    o Management of team roster
Player Performance: Biometrics

• Player performance depends on optimization of training and recovery, reduce injury risk and mental readiness.
  o Sleep
  o Load management

• Biometrics are a tool to gain a competitive edge through science.
What are Biometrics?

• Biometric data: metrics related to human characteristics.

• Examples of biometrics related to sports:

  Sleep
  Heart rate
  Distance run
  Impact forces
  Blood/urine markers

  Throwing arm stress
  Sweat loss/composition
  Body composition
  Nutrition
  Electrocardiogram
How are Biometrics measured?

- Blood or urine analyses
- Clinic or lab tests
- “Wearables”
  - Watches
  - Smartphones
  - Clothing
  - Equipment
  - Other sensors
Biometrics Potential

• Monitor individual athletes (self or others)/team.
  o Recovery
  o Injury risk
  o Training
  o Performance

• Prediction of injury risk

• Develop/improve training, recovery and post-injury rehabilitation protocols
Biometrics in Sports: Concerns

Biometrics appear the way of the future in athletic performance; however, there are important issues to consider before jumping in head-first!
Biometrics in Sports: Concerns

• Institution, athletics program and individual athlete levels:
  o Athlete privacy
  o Data security, ownership, access and lifespan
  o Conflict of interest
  o Liability

• Professional sports leagues
  o National Football League
  o National Basketball Association
Biometrics in Intercollegiate Athletics: Additional Concerns

• Data privacy and ownership issues

• Student-athlete experience:
  o Time-demands
  o Impact on mental performance
  o Privacy

• NCAA compliance
Biometrics and
NCAA Bylaw 17

Countable Athletically-Related Activity
(CARA)
Biometrics – When is it CARA?

• Use of wearable technology must be either:
  o Counted within CARA hours (maximum of 20 hours in-season/eight hours out of season); or
  o Voluntary:
    o Not be required to be reported back to a coach or other athletics department staff member by a student-athlete;
    o Not be reported back to the coach through the use of the device;
    o Initiated by student-athlete; and
    o No penalties for non-participation.
Common Questions from Institutions and Conference Offices

- If data (e.g., heart rate and steps taken) collected by a wearable fitness device that are related to voluntary athletically related activity are viewed by a countable coach or a noncoaching staff member with sport-specific responsibilities, does it trigger countable athletically related activity?

- What if the above information is viewed by an athletic trainer?

- Can a student-athlete report wearable technology data information on Facebook?
Biometrics: When is It Research?

- **Research** as defined by DHHS regulation: “a systematic investigation, including research development, testing, and evaluation, designed to develop or contribute to “generalizable knowledge.”

- Athletics staff often collaborate with faculty researchers to assist with collection and analysis of biometric student-athlete data for presentation and publication, i.e., research.
Research Requirements

• Risks versus benefits evaluated by Institutional Review Board.

• Voluntary, Informed Consent: participants must be given the opportunity to choose what shall or shall not happen to them.

• For student-athletes in particular, the consent process must be structured such that granting consent is truly voluntary and informed.
Concerns about student-athletes as research participants

• Is consent truly voluntary?
• Who will benefit from student-athlete participation?
• Will coaches know which student-athletes are participating?
• Will coaches see results?
• What if the study produces a finding that could impact a student-athlete’s future professional athletic career?

Ideally, these questions should be considered prior to initiation of a research project to ensure the study is in the best interest of the student-athletes.
Oversight of Research on Student-Athletes

- Decision makers might not have the needed expertise or knowledge to make fully informed decisions regarding student-athlete biometric data and/or research.

- Internal research: projects initiated by athletics or researchers from home institution

- External research: outside researchers
Research Oversight Committee

• Membership:
  o Athletics
  o Faculty
  o Faculty athletics representative
  o Former student-athlete
  o Lay member

• Charge:
  *Protect the student-athlete, researcher, and institution by serving as a gatekeeper to access to student-athletes as research participants.*
Questions?

Pam Bruzina
Professor of Nutrition and Exercise Physiology
Faculty Athletics Representative
bruzinap@missouri.edu

NCAA Institutional Performance Program (IPP) Staff
ipp@ncaa.org