

Performance Analysis in Team games (ΑΠ-197επ)

Lecture 1

Sports Performance Analysis: Applications and Research

Organization of the course

- Registration E-class
- Credits 90% theory (26 hours)
- Communication in E-class
 - Email: sodrikos@phed.uoa.gr
 - Digital class link: <https://uoa.webex.com/meet/sodrikos>
 - **Select to schedule a face-to-face or teleconference meeting.**
- Assessment
 - 50% of the final grade: Assignment via E-Class platform
 - 50 % of final grade: 5 Micro assignments asynchronous (MAS) of Information and Communication Technologies (ICT) via e-class
 - 1 MAS=1 point
 - The duration of submission of each MAS is 2 weeks.

Formal Games

- Time dependent



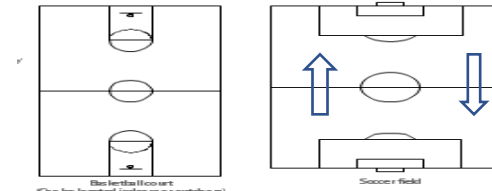
- Score dependent

Russia										Brazil
15	3	2								9
Russia	19	20	29	25	15					
Brazil	25	25	27	22	9					

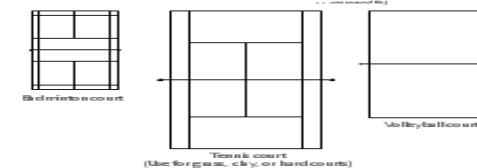
- Innings dependent

BALL	3			STRIKE			2			OUT			0		
	1	2	3	4	5	6	7	8	9	RUNS					
GUEST	0	0	2	0	0	0	0	0	0	02					
HOME	0	0	0	3	0	0	3	0	0	06					

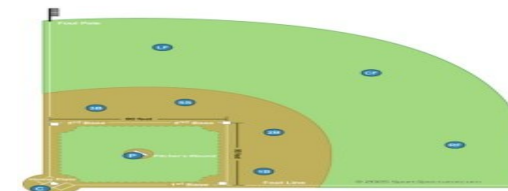
- Common playing area. Invasion



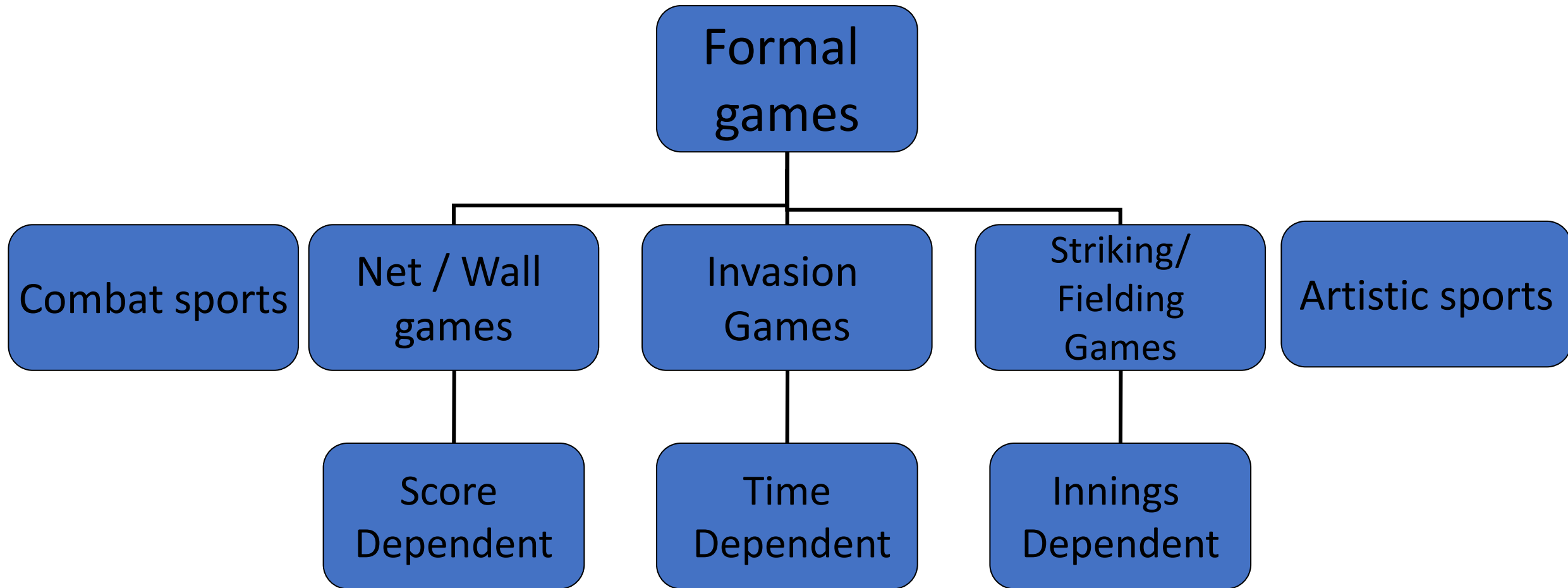
- Different playing area



- Change offense/defense per period



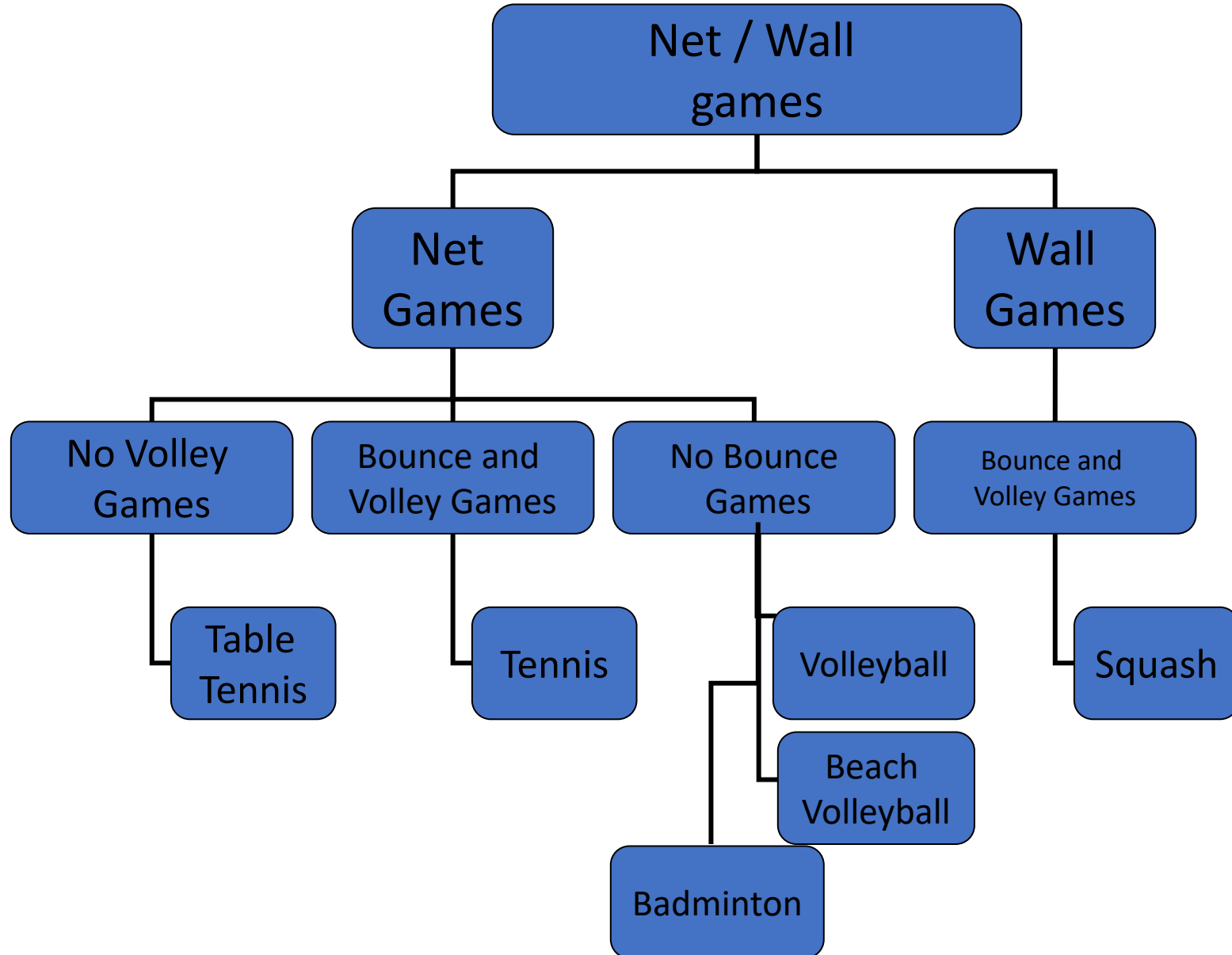
Formal Games



Formal Games



Formal Games



What is Sports Performance Analysis?

- Sports Performance Analysis (SPA) is the process of systematically observing, measuring and evaluating the performance of an athlete or a team in competition or training, to provide objective data and information that enhance understanding, improve tactics and techniques and support data-based or evidence-based decision-making. It includes the use of tools such as video analysis and statistical data to provide feedback that helps athletes and coaches improve training, improve strategy and achieve maximum performance.

Why Analyze Sports Performance?

- Coaches have an inaccurate recall of events due to:
 - Bias
 - Emotion
 - Fatigue
 - Difficulty observing everything
- Video recording and statistics provide accurate records
- Helps coaches make informed decisions based on data

Anatomy of a decision

- Expertise
- Intuition
- Other Knowledge
- Data



Who Uses Sports Performance Information?

- Coaches and players
- High-performance managers (identifying trends, strategic decisions)
- Strength and conditioning coaches (movement data analysis)
- Sports psychologists (video sequences for discussions)
- Recruitment analysts (liaising with scouts and coaches)

Multidisciplinary vs. Interdisciplinary Approaches

- Multidisciplinary: Services tackle problems independently and discuss them later.
- Interdisciplinary: Collaboration from the outset, integrating information streams.
- Importance of establishing frameworks for integrated sports science support.

Beyond Coaching

- Broadcast and Media Uses
 - Match statistics for commentators to enhance viewer experience
 - "Infotainment": Performance analysis in sports coverage and social media
- Data and Betting Markets
 - Apps providing data collected live during matches
 - Importance of reliable coders to collect accurate data
- Sports Integrity
 - Data analysis can't prove match fixing, but can alert interested parties
 - Variability in performance is a challenge for detection
 - Example: Henry Stott's model predicting upsets in the 2002 FIFA World Cup (e-class)
- Analyzing Referee, Umpire, and Judge Performance
 - Performance analysts employed by squads and governing bodies
 - Specialist roles: recruitment analyst, set-piece analyst, etc.
 - Freelance analysts working with multiple squads and teaching part-time
 - Coaches with software skills reviewing performances

Who Analyzes the Performance

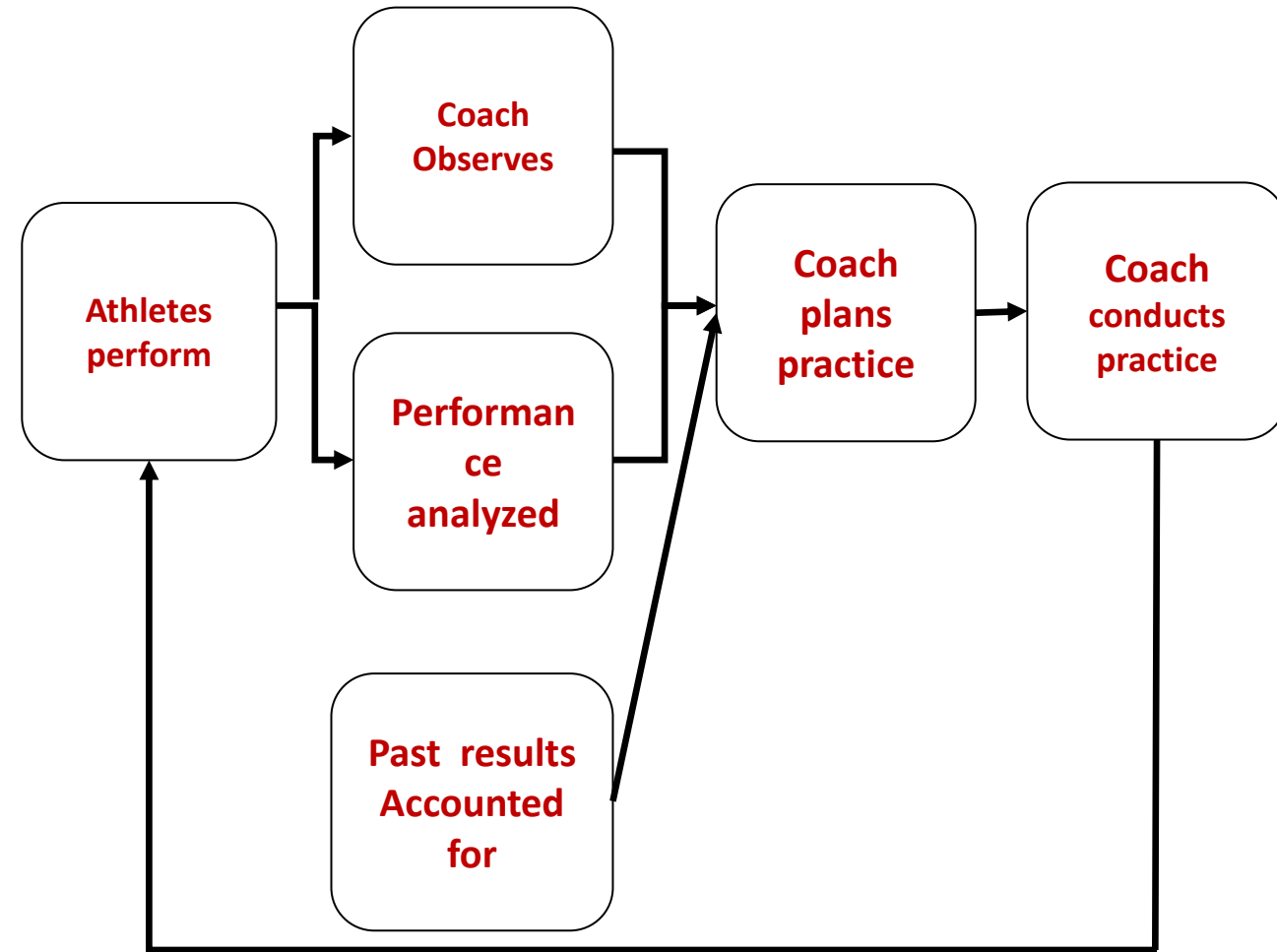
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Work Experience and Developing Skills

- Importance of work experience in sports performance analysis for professional roles
- Developing technical skills, intellectual ability, and academic knowledge
 - Data recording
 - Videoanalysis and telestration (<https://www.kinovea.org/>; <https://www.openshot.org/>; <https://lince-plus.com/>)
 - Data Mining, Data Analysis and visualisation [Excel, SPSS, Power BI, R, Tableau, Python etc]
- Most performance analysis programs now include work experience modules

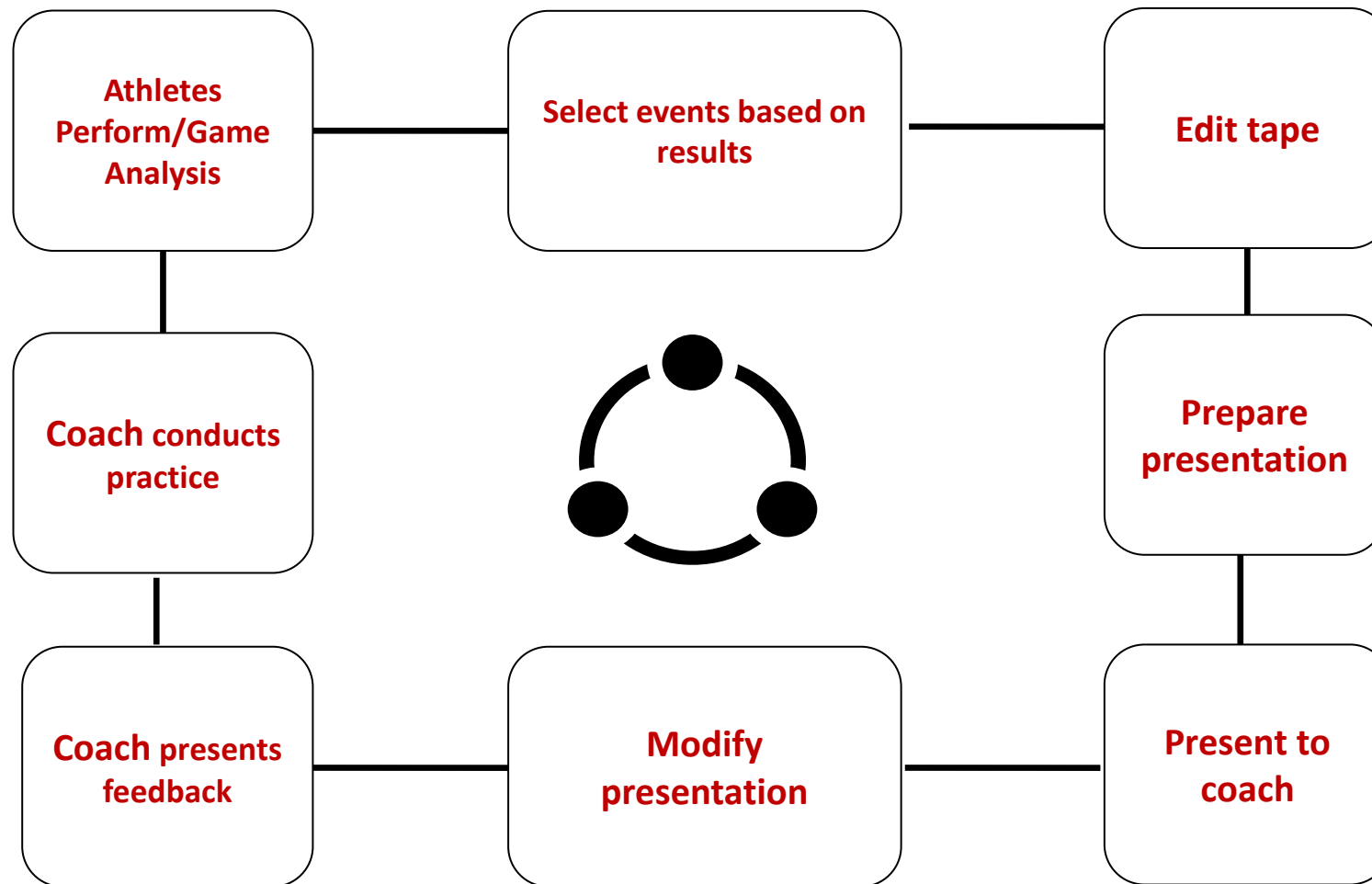
Where and When? (Coaching Context)

- Performance analysis activities: data collection, data analysis, communication
- Classic coaching process models: cyclical analysis between matches



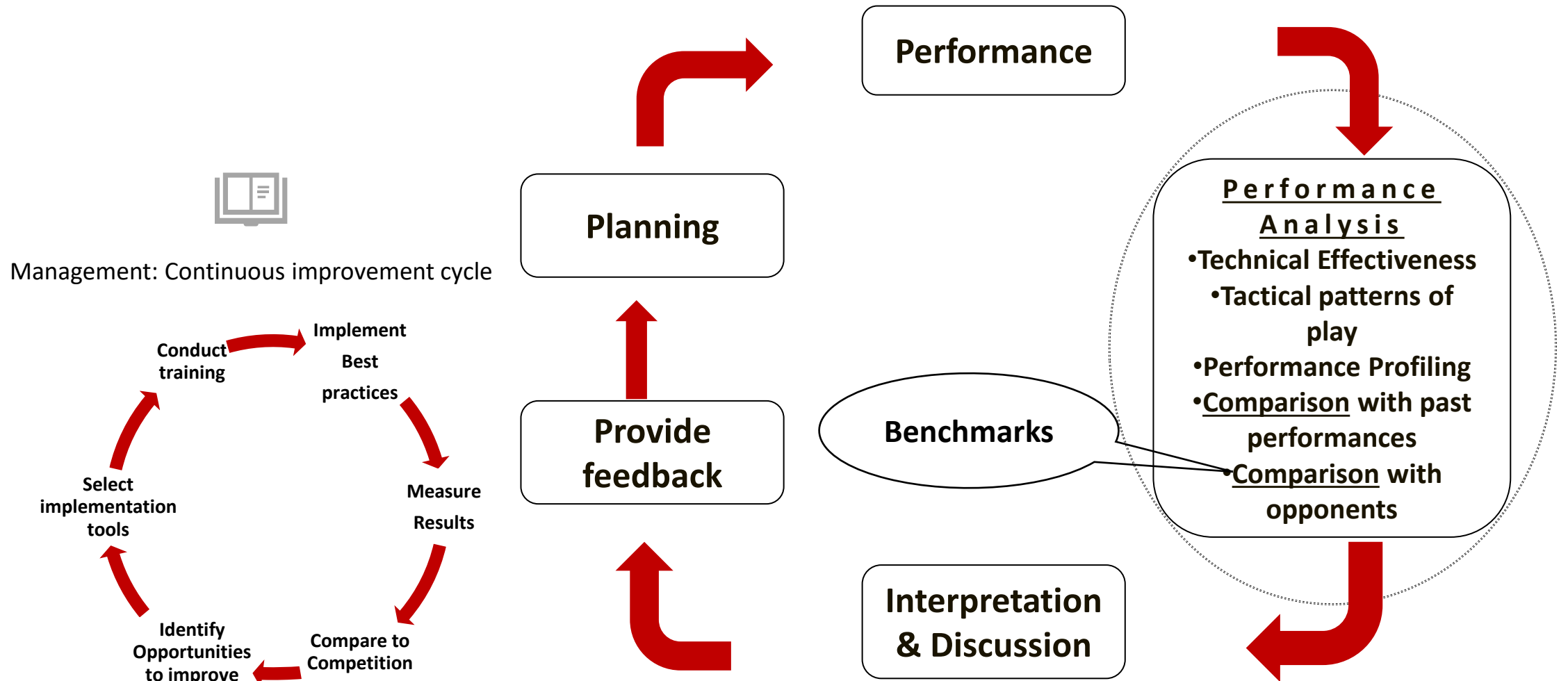
Coaching process in its observational, analytical and planning phases (Franks et al., 1983).

Where and When? (Coaching Context)



Coaching process in its observational, analytical and planning phases (Franks et al., 1983).

Where and When? (Coaching Context)



The role of performance analysis in the cyclical processes of coaching (adapt from Carling, Williams & Reilly, 2005)

Where and When? (Technological Advancements)

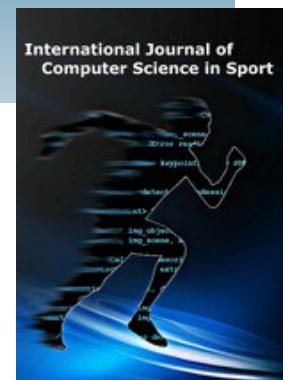
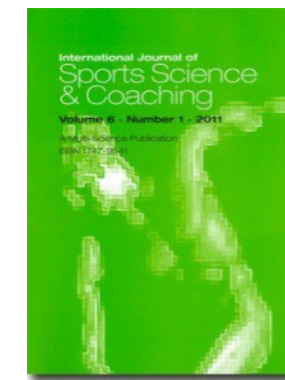
- Live feedback during competition (Formula One racing example)
- Data collection from anywhere with internet access (IP cameras)
- More data gathered during matches using iPad devices for live entry

Where and When? (Data Analysis and Presentation)

- Data analyzed using video analysis software features
- Decisions made about video sequences for player feedback
- Locations for analysis include venue, analyst's office, home, etc.
- Statistics and video sequences presented collectively or individually

Sports Performance Analysis Research

- Research on sports performance (separate from coaching context)
- Importance of research communication for knowledge building
- Research can be applied or purely knowledge-generating
- Initial Step: Graduate Thesis



What is Research?

- Research is a systematic process of studying a subject of interest.
- Research can be conducted in various fields and for various purposes.
- Examples: Law, journalism, commercial organizations, academia.
- Research can be applied to real-world problems or for pure knowledge generation.
- Research findings are communicated through articles, reports, presentations, etc.
 - Communication of research is crucial for knowledge advancement.
 - Publicly funded research has a duty to be published and accessible.
 - Challenges: balancing open access with cost of research and publication.
 - Importance of critical evaluation: research methods, limitations, etc.

Qualities of Good Research in SPA

- **Originality:** Contributing new knowledge or confirming/refuting existing findings.
- **Rigor:** Careful data collection and analysis, using valid and reliable methods.
- **Impact:** Real-world relevance and contribution to practice or policy.
- Examples of good and bad research practices related to data rejection and publication bias.

Writing Up Sports Performance Research

- Research proposals: planning and justifying the research project.
- Different sections of a research report: introduction, literature review, methods, results, discussion, conclusion.
- Differences between dissertations (undergraduate, master's, PhD) and journal articles.
- Conference presentations: abstracts, slides, posters.
- Importance of referencing and accurate representation of existing work.

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