

Performance Analysis in Team games (ΑΠ-197επ)

Lecture 8

Establishing a normative profile in PA

Performance Analysis profile

- Performance profiles are the stabilised performance indicators in skills and tactical behaviours.
- Athletic meetings of all sports take place in a wide range of levels and age categories. From development level to national, international and the highest level of performance.
 - Not all aspects of sports have been analyzed at all levels of activity.
 - Opportunity for thesis with data from observational studies.

Establishing a Performance Analysis profile

- Competitive performance indicators are not fixed variables like variables that express anthropometric measures.
- There are many causes of the differentiation of competitive performance indicators
 - The effect of the opponent
 - Quality
 - Compatibility
 - Squash athletes had greater consistency in their performance (technical and tactical indicators) when competing with the same opponent than with a different one (McGarry & Franks, 1994).
 - Home Advantage
 - Scoring evolution
 - Hot hand phenomenon
 - Back to the wall phenomenon
 - Momentum of the game
- To create a performance profile, competitive performances from many sports meetings must be taken into account.
 - How many and how up-to-date?
 - What is the smallest number of sports meetings that form a stable performance profile?
 - Does this number differ for individuals, teams, gender, or level of activity?

Establishing a Performance Analysis profile

- The larger the database, the more accurate the model.
 - Inherent weakness: As the database grows, it becomes less sensitive to identifying changes in profiles.
- Increased weighting of recent data over older data.
 - If a certain amount of data is needed to describe the competitive profile, then at the same time as new data is entered into the database, an equal number of old data points must be deleted.

Establishing a Performance Analysis profile

- The nature of the observed performance indicators and the level of the competitors influence the number of competitions that are sufficient to determine and stabilise the athletic performance profile.
 - Data based on a mapping of the field surface requires more data than data that analyses the performance indicators descriptively (e.g. how a football team organises its attacks, how many shots it takes on goal).
 - Performance quality vs. Playing style
 - A different number of matches is necessary for high-level athletes compared to lower-level athletes for skills and tactical behaviours.
 - More or less

Establishing a Performance Analysis profile

- We Know for
 - Soccer, aprx. 4 matches (Tiryaki et al., 2000)
 - Squash 6-11 for top-level players (Wells & Hughes, 2001)
 - Badminton, 9-15 matches (Evans, 1999)
 - Volleyball, regarding attack choices (distribution and direction), 8 sets for top-level and 5 sets for non-top-level (Daniel & Hughes, 2001).

Operations of the Performance Analysis profile

- Comparison of competitive performance profiles.
 - Interpretation of result in a sports match
 - Interpreting the ranking in a tournament or championship.
 - Type of competition
 - 1 vs all, in number of rounds (ideal for interpreting rankings and performance)
 - Combination of groups with a single elimination system.
 - Single elimination system
 - Double elimination system
 - Combination of groups with a double elimination system.

Operations of the Performance Analysis profile

- **Modelling sport performance**

- Simulation of sports events (matches)
- Prediction of result
- Prediction of performance
 - X-goals
 - Distance from the goalpost
 - Angle in relation to the goal (if it is central, from the side, how wide, etc.)
 - Type of execution (shot or header)
 - Type of assist (long ball, cross, vertical, turn from the side to the back)
 - The phase itself (in the normal flow, in the execution of a corner, foul, etc.)
 - If it were a one-to-one, with the goalkeeper as the only opponent
 - If a dribble preceded the execution
 - If the final attempt came after a save by the goalkeeper
 - The distance of the defenders from the player executing

Operations of the Performance Analysis profile

- [The Federer case](#)
 - Let's discuss about this
- [Football](#)
- [Basketball](#)
- [Volleyball](#)

Data mining

- 1st way: Embedded instruction (Uploadable)
- 2nd way: Excel/ Data tab/Get Data from the Web
- 3rd way: Data selection/ Copy/Paste to PDF/
- Format data to make it editable
 - Clean up unnecessary graphical elements
 - Format headers on the 1st row
 - Freeze 1st line.
 - Freeze window sections, if needed.
 - Format variable names (one variable/per column).
 - Use initial letters and encoding
 - Latin alphabet (no spaces)
 - Choose to keep only primary variables.
 - Calculate Performance Indicators derived from primary variables.
 - Specify the formatting [number or percentage, number of decimal places (usually 2)].

Operations of the Performance Analysis profile

- Summary Statistics
- Ranking by Variable (Data/ Sorting)
 - Correlation of Final Ranking with Performance Indicators
 - Correlation: How Strong the Relationship is Between 2 Variables
 - Causal Relationship. Correlation implies causation.
 - Correlation Coefficients give a value for the strength and direction (positive, negative) of a relationship between 2 variables
 - Pearson's r coefficient (between variables continuous and discrete)
 - Spearman's ρ or Kendall's τ coefficient (between nominal and ordinal variables or between a nominal or ordinal variable and a continuous or discrete)
 - Level of correlation:
 - $>|0.7|$ strong correlation
 - $|0.7| - |0.45|$ moderate correlation
 - $|0,2| - |0,45|$ weak correlation
 - $|0,0| - |0,2|$ no correlation
 - Excel Functions: for Pearson (CORREL)- for Spearman's ρ (RANK and CORREL)

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