

WCPAS 8

The relationship between volleyball skills and final ranking in high level men's volleyball.

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Analysis of sports

- Analysis of athletic skills is a valuable resource for coaches in order to help teams' progress because they can:
 - Give appropriate feedback to their athletes.
 - Plan strategic and tactical option more effectively.
 - Draw information about the characteristics and trends of the playing model and compare teams and athletes in a championship (Byra & Scott, 1983).

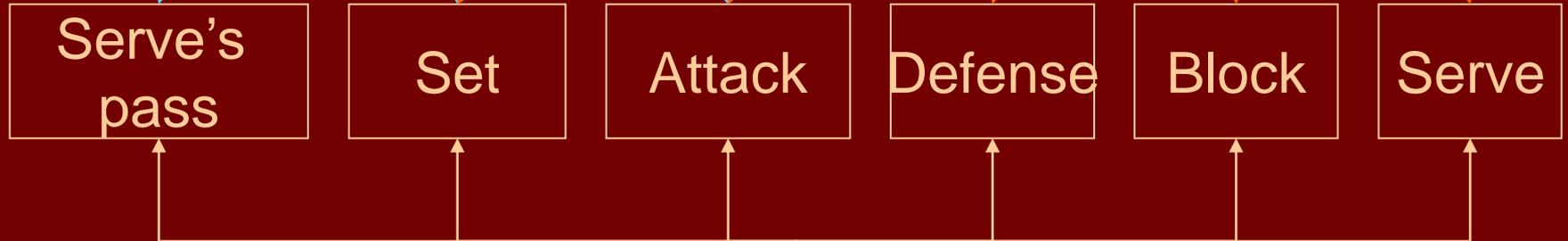
Analysis of Volleyball

- Observation and evaluation is very important because of the amount of ball touches.
- Observation allows individual and team analysis in terms of technical and tactical performance.

2 Complexes of volleyball game

Complex 1-
Attack after serve's pass

Complex 2-
Attack after defense



6 Basic Volleyball Skills

(Nishijima, Ohsawa, Matsuura, 1987)

Literature

- With data from Olympic Games 2000 & 2004. Attack is the most important skill in volleyball (Laios & Kountouris, 2005)
- With data from Italian Championship 2004-05. Attack and block are the most important skills for the success of a men's volleyball team (Lobietti & al., 2006).
- We examine attack separately in both complexes.

Method

- All the matches of the Greek professional men's League are recorded and analyzed through the software Data Volley (Data Project s.r.l., Bologna, Italy) by one scout man registering every touch of the ball during the game.
 - Player's number.
 - Playing skill with a letter.
 - S for serve
 - P for serve's pass.
 - AP for attack after serve's pass.
 - AD for attack after defense.
 - B for block.

 - Evaluation of a skill following a scale using the symbols below:
 - # for perfect execution.
 - + for good execution.
 - - for execution does not affect the process of the action.
 - / for a bad execution .
 - = for wrong execution giving an immediate point to the opponent.

- We analyzed the data in relation to all games (132) of the entire A1 men's regular season 2005-06 for each team (N=12).

Method

- We considered the percentage of the following twelve parameters:
 - Serve aces (S#),
 - Lost Serves (S=),
 - Ratio of lost Serves to Aces (SR)
 - Attack points after serve Pass (AP#)
 - Attack errors after serve Pass (AP=)
 - Attack stuffed after serve Pass (AP/)
 - Attack points after Defense (AD#)
 - Attack errors after Defense (AD=)
 - Attacks stuffed after Defense (AD/)
 - Direct Blocks (B#)
 - Perfect Passes (P#) and
 - Passes errors (P=)

Method

- We selected the variables which determines the completion of the action and the assignation of the point, except R#.
- We chose to take into consideration the variables in terms of the percentage of the total execution of each skill, something that allows us to compare the teams' profile to one another and obtain information about the stability of their performance during the championship.

Method

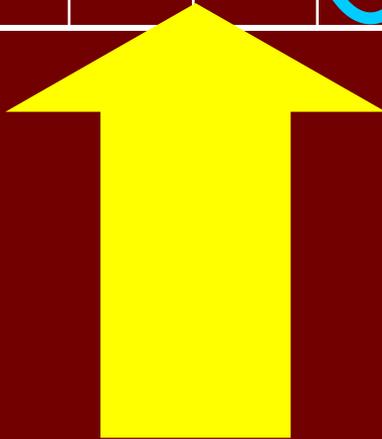
- A Pearson r correlation coefficient was computed between these variables and team points in the final ranking of the regular season (PFR), which was calculated according to the point system of the entire championship as following:
 - 3 points for winning team 3-0 or 3-1,
 - 2 points for winning team 3-2,
 - 1 point for losing team 2-3 and
 - no points for losing team 1-3 or 0-3.
- A multivariate regression analysis has been carried out to detect the relationship among the parameters, and their decisive role in the success of a volleyball team in the entire championship.

Results-Descriptive statistics

	Min	Max	Mean	Std. Deviation
%S#	.05	.10	.0672	.01183
%S=	.14	.21	.1737	.02368
SR	1,95	3,38	2,638	.48605
%AP#	.45	.59	.5267	.04172
%AP=	.07	.11	.0873	.01245
%AP/	.07	.15	.0991	.02272
%AD#	.35	.56	.4544	.05466
%AD=	.06	.12	.0994	.01801
%AD/	.06	.13	.1021	.02228

Results - Correlations

	PFR	% S#	% S=	% P#	% P=	% AP#	% AP=	% AP/	% AD #	% AD =	% AD/ #	% B#	SR
PFR	1	.66 (*)	-.38	.79 (**)	-.51	.87 (**)	-.64 (*)	-.81 (**)	.289	-.66 (*)	-.55	.18	-.82 (**)



Multiple Regression Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	Df1	Df2	Sig.F change	Durbin-Watson
1	.866(a)	.750	.725	8,946	.750	30,009	1	10	.000	
2	.917(b)	.841	.806	7,514	.091	5,176	1	9	.049	2,074

a Predictors: (Constant), AP#

b Predictors: (Constant), AP#,SR

c Dependent Variable: PFR

Discussion

- All the variables for attack during complex 1 are important for a team's success [AP#: $r=.866(**)$, AP=: $r=-.635(*)$, AP/: $r=-.810(**)$].
- Also the high positive correlation of P# with PFR [$r=.787(**)$] and with AP# [$r=.888(**)$] confirm the belief of many coaches that serve's pass is very important for the success of a men's team.
- The performance of a team in complex 1 may be considered very important for its success in a championship. The same is concluded by Marelic et al.(2004) in a case study of the performance of only one team.

Discussion

- From the skills of complex 2, the ratio of the two variables related with serve (S# and S=) gives the higher correlation with final ranking [$r = -.816(**)$].
- Block is weakly correlated with FPR. In future researches skill of blocking should be recorded separately in the two complexes.

Discussion

- For a multivariate regression analysis the two independent variables (AP# and SR) with the higher correlation to PFR gives high coefficient of determination ($R^2 = .841$) and also good adjusted coefficient of determination ($R_{adj}^2 = .806$).

Thank you for your attention.