Chapter V

Summary, Conclusion and Recommendations

5.1 Summary

Volleyball is an extremely popular participation sport worldwide (Briner & Kacmar, 1997). It is highly dominated by the coordination of sequential actions. The players’ performances in one phase of the game are dependent upon their performances in the previous phase. It indicates that all skills are important for evaluation or assessment of overall performance during play. As per the reviewed literature, there are number of skill tests and performance evaluation criteria available, but these criteria again have some limitations which have been discussed in chapter 1, specifically in the Indian context. In order to develop performance evaluation rating scale in the Indian context, researcher had undertaken the research problem as “Development of Performance Evaluation System in Volleyball”.

The main objective of this study was to develop performance evaluation criteria to evaluate player performance during the game, which was based on the guidelines of Volleyball Information System criteria. The study was delimited to only elite senior male volleyball players. Only six volleyball skills (serve, pass, set, attack, block and dig) were determined for the study.

The reviews related to the study were classified and presented in chapter two. All the reviews are classified as 1) reviews related to the important volleyball skills 2) reviews related to the content validity 3) reviews related to the reliability and objectivity 4) reviews related to the technique of sample collection, 5) reviews related to the methods of data collection

It is an action research where the researcher adopted descriptive method for this study. The PRS was developed to evaluate senior male elite volleyball player performance during live matches. Therefore the purposive sampling method was selected for the study. Total 11,623 actions were recorded from a senior national volleyball
championship, which was conducted at Chennai during 2010. The PRS was developed as per the standard research procedures. The PRS was developed in seven different phases and eighteen different stages. To provide the scope for subjective and objective evaluation in PRS, the content validity was established by expert’s opinion. The reliability was developed by the test retest method. And the objectivity was developed by rating data provided by three different observers. All the experts were Indian volleyball coaches with a minimum experience of 15 years. After establishing validity, reliability and objectivity of the PRS it was tried out in a live match, where the performance of single match was tested by applying two different methods, 1 live match evaluation and 2. Video recorded match evaluation as per the criteria mentioned in PRS. Finally a manual was prepared for PES-VB to provide guidelines of how to use the criteria developed to evaluate player performance in a live match.

Data analysis, interpretation, findings and discussion of findings reveal that the PRS could be considered as a tool to be used for performance evaluation in volleyball. To find out the Objectivity researcher used intraclass reliability method in which ANOVA and the intra class correlation coefficient was calculated between three sets of data. And to find out the reliability of PRS Pearson’s correlation coefficient was applied. The PRS try out data was also analyzed by Pearson’s correlation coefficient. In establishing content validity of PRS total 8 main scenarios were found, which were Acceptance, Deletion, New addition, Splitting, Merging, Modification, Upgrading and Degrading of situations. There were a total of 102 situations revised and a few new (complete or optional) situations were added during the process of establishing validity, out of 102 total 45 situations was accepted, 35 new situations was added, 17 situations was merged, 16 stations were deleted, 9 situations was modified, 7 situations was degraded, 5 situations were Split and 3 situations was upgraded. Overall Acceptance of situations was the dominative factor found in PRS. The reliability of PRS was found highly significant at 0.01 level of significance. And the Objectivity of PRS was found highly significant at 0.01 level of significance for five variables, but the objectivity of the variable Set was found acceptable and comparatively low with respect to other variables. Finally the PRS was tried out on the live match and the reliability of this try out was computed. While establishing the reliability, of the six variables studied, in 4 of the variables the correlation was found to be highly significant at the 0.01 level and 1 were found to be significant at 0.05 level of significance. But the reliability of Set
variable was found acceptable and comparatively low with respect to other variables. Hence, Set is the only common variable which exhibited comparatively low correlation in both the evaluations.

This indicates that PRS tool is valid and reliable in all the six variables; however the Set variable needs to be further refined to be highly significant.

5.2 Major Findings

- During establishing content validity of PRS, total 8 changes had been observed namely, Acceptance, Deletion, New addition, Splitting, Merging, Modification, Upgrading and Degrading of situations. Throughout all the feedback it has been observed that experts had accepted most of content from extreme two scales named, excellent and poor, and provided their judgment at middle three scales named good, average and below average, which was subjective, but comprised in objective form.

The key changes which was taken place during this process are given below,

- The experts laid more focus on middle three scales to suggest changes.
- In all three feedbacks accepting the situation was most dominative factor of the feedback.
- Merging of similar effect producing situations was second top most factors of these feedbacks.
- Replacement of the situation was a third top most factor found in these feedbacks.
- Titles of situations were modified by accepting suggested changes.
- The experts gave more importance to the immediate effect produced by the action than the effect produced by the sequential actions.
- Experts had given more importance to target oriented performance than attack combination.
- Experts had suggested targets to evaluate immediate effect of actions.

- The PRS reliability and objectivity found as below,
  - The five point rating scale developed for pass skill of volleyball. The scale has high correlation coefficient of reliability (.976) and Objectivity (.959)
  - The five point rating scale developed for Set skill of volleyball. The scale has low but acceptable correlation coefficient of reliability (.890) and Objectivity (.496)
• The five point rating scale developed for the **Dig skill** of volleyball. The scale has very high correlation coefficient of (reliability) .993** and (Objectivity) .959.

• The five point rating scale developed for the **Serve skill** of volleyball. The scale has very high correlation coefficient of (reliability) .988** and (Objectivity) .963.

• The five point rating scale developed for **Attack** skill of volleyball. The scale has very high correlation coefficient of (reliability) .998** and (Objectivity) .993.

• The five point rating scale developed for the **Block skill** of volleyball. The scale has very high correlation coefficient of (reliability) .975** and (Objectivity) .961.

### 5.3 Discussion

The purpose of present study is to develop such a performance evaluation criteria which will provide the scope to evaluate each skill performance during the actual game. As the literature indicates that the rating scales have several limitations to clearly define the traits or characteristics (Best, 2008). To keep this in mind, Researcher initially focused on developing such a rating scale, which will provide a wider scope to the raters to rate the skill performance on the basis of the criteria mentioned in rating scale and expert’s own experience from the field of volleyball. The PRS has two dimensions of evaluation; it has objective as well as subjective structure. To develop such a criteria researcher initially reviewed related literature to the study. The reviewed literature highlighted the various dimensions of studies, which had been contributed to evaluate the performance of volleyball skills during the play. The present study had been adopted study variables from the reviewed literature, which indicates that all six volleyball skills has their own importance in play, and without their consideration a high level of play cannot be completed (VIS, 2000, Datavolley, 2007; Wangwad, 2001). These variables are service (Yiannis, 2005), Pass (Florence, 2008) Set (Bergeles, et.al, 2011), Attack (Tsivika et.al.2008), Block (Marcelino, 2008) and Dig (Michelle et.al. 2010). Most of the studies had been done on individual skills and its parameters. Where the more focus was given on type of skill, execution zone, direction (Yiannis, 2005, Quiroga, et.al, 2012, Tsivika et.al.2008, Florence, 2008), effect of one skill on other (Quiroga, et.al., 2010, Palao, 2011, Bergeles, et.al, 2011, Afonso, et.al, 2012, Fellingham, et.al, 2013, Silva, 2013, ), compared effectiveness between skill. (Marcelino, 2008, Bergeles, et.al 2009, Sotiris, 2009, Bergeles, et.al. 2010, Patsiaouras, et.al. 2011, Romero, et. al. 2012), all these studies are found an in action evaluation.
These reviews indicate how to improve the skills, performance, which are recent trends in the concerned skills, offensive and defensive elements of the game, ongoing trends in tactics, strategies & the game pattern in volleyball. Above discussed all studies follow one way to evaluate skill performance in volleyball. Such studies are very good means to evaluate the performance of individual skill, but the same are not suitable to evaluate all skills performance under one head simultaneously during the match. To evaluation in action performance for instant feedback, specific criteria based rating scales are required. To keep in mind the need of such a criteria, the researcher adopted different approach to evaluate skill performance in the present study. The criteria mentioned in PRS are based on immediate effect produced by the actions during the game, instead of considering different parameters of the skill. There are few studies highlighted in the reviewed literature (VIS, 2000; Datavolley, 2007, Eom & Schutz, 1992, Coleman, 1992) which are found some extend of similar elements, like VIS, which is base of the present study found some of similarities at two extreme scales. Where in both criteria skill success and failure is evaluated. In VIS skill success means skill scores a point, but in PRS the more importance is given how the skill scores a point. If point not scores by skills efforts, then they were not evaluated in higher scale. But the scale of skill failure is as similar as discussed in VIS. Further more three middle scales are completely different than any of the existing criteria. The scope for subjective evaluation has been administered under these scales, where the scale evaluates the skill performance in scale of advantageous to team, average or neutral and advantage out to the team, as example, service creates free ball situation is advantageous to team to organize combination of attack under easy situation. But on the contrary if serve allows opponents to perform combination of attack after easy serve reception, then it becomes advantageous out situation to the team, because team has to struggle to keep ball alive in the rally. In average scale were the effect not exactly in favor of team or not against of team. Coleman, (1992) also developed rating scale to evaluate in action performance of volleyball skill. The present study has few similar elements like free ball situation, serve reception error, limited attack or multiple attacks, ace serve; ace attack and kill block. The present study has such similarity in extreme two scales and a few other elements, but overall the PRS having a different approach in middle three scales. The innovative criteria developed at these three scales, like in pass and dig skills quality is evaluated against hard serve or attack, extraordinary actions as well as determined target, these elements indicates the extra efforts put by the player to
keep ball alive and maintain the quality of action. Where in set the more emphasis given on no block situation, a single block situation under difficult pass, single block situation under easy pass and the multiple block situation under easy or hard situation, these all indicates the combination of intelligence and extraordinary actions of setter against good or bad pass as well as brilliant or average blocker and attacker to make available all possible favorable situations for attackers. In block kill block and block error is common factor found in other study and the different element are block or attack touched out ball becomes direct set for opponents attacker, block or attack touched out ball reaches out of court or secondary target of home side. The quality of free ball that created by block or attack (convenient or non-convenient flight of the ball to retrieve) are found different from other studies. To develop PRS the researcher adopted standard procedure from reviewed literature, like establishing validity, reliability, objectivity and objectivity (Wangwad, 2001; Mortensen, 2007; Carine et.al.2011; Marx, 2001; & Manuel, et.al. 2012). These studies also work to develop evaluation criteria, norms or evaluation notation system. Overall the study findings indicates that the PRS is having wider scope of evaluation, which will be very useful for bench caching feedback and also analysis and scouting of team performance during game or training.

5.4 Conclusions
After analysing the data following conclusions are made

- PES-VB (performance evaluation system in volleyball) has been developed as per the standard research procedure and it has sufficient acceptability to use in Volleyball. Only qualified coaches can use this tool
- Total six volleyball skills rating scales were developed in this study. It can objectively as well as subjectively evaluate the player performance during a volleyball match at senior levels in India with acceptable reliability, validity, objectivity and administrability.

5.5 Recommendations
Based on the results, this study recommends that-

- Research on the use of PES-VB to discriminate the talent of volleyball players during competition and training be conducted.
Computer software and technology should be interlinked along with the PES-VB so as to give instant data of performance analysis.  
Further research needs to be done to refine the rating scale of the Set skill.  
It is recommended to conduct a similar study on Beach volleyball.  
PES-VB only for elite volleyball players, similar scales be developed for different levels.

5.6 Contribution to the knowledge

Performance evaluation system is very specific and sufficient to evaluate senior, youth and university level player performances in volleyball. After application of this system one can get a feedback on one’s own team and if required one can make necessary changes in coaching. Players can come to know their own strengths and weaknesses, which ultimately motivates them to improve further.  
Instant feedback or spot analysis can be possible for a live match. There are much software available in the market but they are all very expensive, and are not affordable. Therefore, application of this tool in the field of volleyball can fulfill a coaches’ purpose.  
This study would contribute to the literature of Indian sports with specific reference to volleyball, providing the scientific process and criteria for subjective as well as an objective evaluation of volleyball players of India.
References


