CHAPTER – V

SUMMARY, CONCLUSIONS AND IMPLICATIONS

SUMMARY

Sports psychology knows no frontiers and boundaries. Its area and scope of operation is increasing day by day with new findings constantly adding to the existing literature. All the psychological constructs and variables which may influence the sports performance are being exhaustively examined in different game situations and sports settings with new results and findings being added from time to time. Out of these various psychological variables, emotional intelligence, self-esteem and mental simulation are few such constructs which have not yet been fully explored. Emotional intelligence is the ability to monitor one’s own and others feelings and emotions, to discriminate among them, and to use this information to guide one’s thinking and actions. Therefore, it is quite apparent that it can certainly influence and effect the sports performance, both for the better as well as for the worse. By harnessing the energy generated through regulation of emotional competency, a sportsperson can achieve unknown heights. The full potential of this very pertinent psychological variable has not yet been fully explored. “Self” has always mystified the world and still continues to do so. Although self esteem has been studied for more than 100 years but its accurate meaning, its precise nature and its exact influence is yet to be explained. Infact, the concept of self esteem is founded on the premise that it is strongly connected to the actual competence and worthiness, and the relationship of these two as one lives his life. Self-esteem stems from the experiences consciously and might be view as a
person's overall judgement of himself or herself to one’s self-competence and self worth based on reality. As such, it has direct bearing on sports performance and needs to be studied more extensively. Mental simulation or sometimes colloquially called visualization, or “seeing in the mind’s eye” is the experience that resembles perceptual experience and can occur in the absence as well as in the presence of the appropriate stimuli for the relevant perception. It acts as a device for enhancing the memorability or kinesthetic information and thereby facilitating the acquisition as well as perfection of the skill because simulating a skill movement results in measurable contraction that appear parallel to the actual movement. In this way, creating or recreating successful experiences in the mind can be very effectively used for performance enhancement as well as for strengthening various psychological factors and constructs. Hence, this study was undertaken to explore the effects of mental simulation training on the socio-psychological variables selected for this study.

STATEMENT OF THE PROBLEM

The problem selected for the present study was titled as:

_Efficacy of Mental Simulation Training on Emotional Intelligence and Self-Esteem of Basketball Players._

OBJECTIVES OF THE STUDY

The study had the following objectives:

1. To study the impact of mental simulation training on the socio-psychological variable Emotional Intelligence among basketball players.

2. To study the impact of mental simulation training on the socio-psychological variable Self-Esteem among basketball players.
3. To find out the gender differences among basketball players pursuant to mental simulation training on the variable Emotional Intelligence.

4. To find out the gender differences among basketball players pursuant to mental simulation training on the variable Self Esteem (including its sub scales of Personally Perceived and Socially Perceived Self-Esteem as well as on Overall Self Esteem).

5. To evaluate the effects of mental simulation training on the mental simulation abilities of the basketball players.

6. To evaluate the effects of mental simulation training on the three selected basketball skills i.e. single hand set shot, jump shot and lay up start.

7. To make suggestions for developing appropriate and desirable training programme for basketball players and for further research on the basis of the findings of the study.

HYPOTHESES OF THE STUDY

The following were the hypotheses of the study:

1. It was hypothesized that there would be significant post test differences between control and experiment groups on the variable Emotional Intelligence.

2. It was hypothesized that there would be significant post test differences between control and experiment groups on the variable Personally Perceived Self-Esteem.
3. It was hypothesized that there would be significant post test differences between control and experiment groups on the variable Socially Perceived Self-Esteem.

4. It was hypothesized that there would be significant post test differences between control and experiment groups on the variable Overall Self-Esteem.

5. It was hypothesized that there would be significant post test differences between control and experiment groups with regard to their Overall Mental Simulation Abilities.

6. It was hypothesized that there would be significant post test difference between the control and experiment groups with regard to the three selected basketball skills i.e. single hand set shot, jump shot and lay up shot.

7. It was hypothesized that pursuant to the mental simulation training there would be significant gender differences within the experiment group on the variable Emotional Intelligence.

8. It was hypothesized that pursuant to the mental simulation training there would be significant gender differences within the experiment group on the variable Personally Perceived Self-Esteem.

9. It was hypothesized that pursuant to the mental simulation training there would be significant gender differences within the experiment group on the variable Socially Perceived Self-Esteem.

10. It was hypothesized that pursuant to the mental simulation training there would be significant gender differences within the experiment group on the variable Overall Self-Esteem.
11. It was hypothesized that pursuant to the mental simulation training there would be significant gender differences within the experiment group with regard to their Overall Mental Simulation Abilities.

12. That pursuant to the mental simulation training, there would be significant differences within the experiment group on the three selected basketball skills.

13. It was hypothesized that there would be no significant differences between pre and post test status of overall control group on all the selected variables of the study pursuant to their routine training and practice.

14. That there would be significant differences between pre and post test status of overall experiment group on all the selected variables of this study pursuant to mental simulation training programme.

SAMPLE

The sample consisted of total 100 boys and girls in the age group of 15 to 19 studying in 9th to 12th grades of Senior Secondary Schools at Dehradoon in the State of Uttrakhand Pradesh. The sample was divided into two parallel groups i.e. experiment and control groups by using simple random sampling technique. The experiment group comprised 50 basketball playing boys and girls who were subjected to the mental simulation training and the control group comprised 50 those basketball playing boys and girls who were not be subjected to any mental simulation training, but had continued with their routine training and practice schedule. There were equal number of subjects from both the genders.
SELECTION OF VARIABLES

The following variables had been selected to study the effects of mental simulation training:

**Dependent Variables:**

1. Emotional Intelligence.
2. Self-Esteem.
3. Performance in three selected basketball skills i.e. single hand set shot, jump shot and lay up shot.

**Independent Variable:**

*Overall Mental Simulation Abilities:* It was considered desirable to evaluate these abilities among the subjects and then to study the effects of experimental training thereupon as well.

TOOLS USED

The following tests were used to collect pre-test and post-test data:

1) To measure emotional intelligence, Seven Fold Emotional Intelligence Scale constructed by Khera, Ahuja and Sarabjeet (2002) was administered.

2) To measure self-esteem, Self-Esteem Inventory constructed by Thakur and Prashad (1998) was used.

3) To evaluate the overall mental simulation abilities of the subjects, Mental Imagery Questionnaire developed by Rajamanickam (1999) was used.
4) To quantify performance on selected three basketball skills, simple performance chart was prepared.

**STATISTICAL DESIGN**

The data was analyzed statistically on computer keeping in view the objectives sought to be achieved through the present study. One-way analysis of variance was employed to find out the pre-test status between the four groups i.e. control male, control female, experiment male and experiment female groups. This was further supplemented by descriptive values such as mean, SD and mean difference matrix to find out whether there existed any significant differences among these four groups at the initial stage. Further one-way ANOVA was employed to find out the post-test status of control and experiment groups on the selected variables. This was followed by mean, SD and t-ratio matrix to find out the direction of differences. For finding out the significance of gender differences within and among pre-test and post-test groups, one-way analysis of variance and Scheffe’s post hoc test were used. Additional descriptive values i.e. mean, SD and t-values were worked out to find out the significance of differences between the two dimensions of self-esteem i.e. personally perceived self-esteem and socially perceived self-esteem so as to obtain the results regarding overall self-esteem. Descriptives values such as mean, SD and t-values were got worked out with regard to pre-test and post-test status of control group and experiment groups, as well as regarding the three selected basketball skills. The level of significance was set of 0.05 for the purposes of this study.
FINDINGS

FINDINGS REGARDING PRE-TEST STATUS OF THE CONTROL AND EXPERIMENT GROUPS

EMOTIONAL INTELLIGENCE

The results of one-way analysis of variance on the variable Emotional Intelligence revealed that the obtained F-value was merely 1.214 which had not been found to be significant. The mean differences among these groups have also not been found to be significant.

PERSONALLY PERCEIVED SELF-ESTEEM

On the variable Personally Perceived Self-Esteem, no significant differences were found between the selected four groups at pre-test stage and the obtained F-value was found to be 2.275. The mean differences between these groups were also not found to be significant.

SOCIALLY PERCEIVED SELF-ESTEEM

With regard to the variable Socially Perceived Self-Esteem, there were no significant differences among the four selected groups of basketball players as the obtained F-value was 1.003. Among these four groups even the mean differences were found to be significant.

OVERALL SELF-ESTEEM

The results with regard to the Overall Self Esteem at the pre-test stage, have revealed that both the control and experiment groups have overall balanced self esteem.
OVERALL MENTAL SIMULATION ABILITIES

The results of one way ANOVA on the variable *Overall Mental Simulation Abilities*, revealed that the studied four groups were similar in their mental simulation abilities as the F-value was only 1.014 and even the calculated mean differences among the groups have not been found to be significant.

SELECTED BASKETBALL SKILLS

The mean values obtained by four groups with regard to the selected skills and the respective t-values revealed that the differences in the skill levels of these four groups were not significant.

FINDINGS REGARDING POST-TEST STATUS OF THE CONTROL AND EXPERIMENT GROUPS

EMOTIONAL INTELLIGENCE

The one way ANOVA results on the variable *Emotional Intelligence* revealed that the differences between the four groups i.e. the Control Male, Control Female, Experiment Male and Experiment Female were found to be significant (F=24.062, p<0.01, Table-11). It was found that pursuant to the mental simulation training, there has been significant increase in the levels of emotional intelligence among the subjects of Experiment Group. However, the gender differences within Control Group as well as the Experiment Group were not found to be significant.

PERSONALLY PERCEIVED SELF-ESTEEM

With regard to the variable *Personally Perceived Self-Esteem*, the results of one way analysis of variance have revealed that there were significant differences between the selected four groups (F-value
being 10.887, \( p<0.01 \), Table-13). The subjects of Experiment Group were found to be having significantly higher level of personally perceived self-esteem. The gender differences within the Control as well as Experiment Groups have not been found to be significant.

**SOCIALLY PERCEIVED SELF-ESTEEM**

The results with regard to the four selected groups on the variable *Socially Perceived Self-Esteem* have exhibited significant differences among these four groups (\( p<0.01 \), F-value being 8.491, Table-15). The results have reveal that there was significant increase in the levels of socially perceived self-esteem among the subjects of Experiment Group as a result of mental simulation training. However, no significant gender differences have been found both within the Control Group as well as within the Experiment Group.

**OVERALL SELF-ESTEEM**

With regard to the *Overall Self-Esteem*, the results in Table-17 have revealed the subjects of Control Group and the Experiment Group had balanced overall self-esteem at the post test stage.

**OVERALL MENTAL SIMULATION ABILITIES**

The results in Table-18 have revealed significant post-test differences as regarding the *Overall Mental Simulation Abilities* among the four groups (\( p<0.01 \), F=13.847). These results revealed that pursuant to the mental simulation training, there was significant increase in the mental simulation abilities among the participants of Experiment Groups. With regard to these abilities, no significant gender differences have been found among both Control and Experiment Groups.
SELECTED BASKETBALL SKILLS

The results regarding the three selected skills at the post experiment stage have revealed that the Experiment Group male and female subjects demonstrated significantly better level of skills (p<0.01 in all the cases, Table-20) as compared to the Control Group Subjects.

FINDINGS REGARDING PRE-TEST AND POST-TEST DIFFERENCES WITHIN THE EXPERIMENT GROUP

EMOTIONAL INTELLIGENCE

The oneway analysis of variance results on the variable Emotional Intelligence with regard to the pre-test male, pre-test female, post-test male and post-test female groups of the Experiment Group have revealed there were significant differences among these group (p<0.01, F=21.007, Table-21). The results in Table-22 revealed that at the post test stage, the male subjects had experienced significant increase in their levels of emotional intelligence pursuant to their undergoing mental simulation training. Similar results have been obtained by the female subjects of this group i.e. the Experiment Group. The gender differences have not been found to be significant either at the pre-test stage or at the post-test stage.

PERSONALLY PERCEIVED SELF-ESTEEM

On the variable Personally Perceived Self-Esteem, the results have revealed that the differences between the pre test and post test stages within the Experiment Group were found to be significant (p<0.01, F-value being 13.989, Table-23). It has been found that pursuant to undergoing the specifically designed mental simulation training, there was significant increase in the levels of personally perceived self esteem of the subjects of experiment group. The gender differences
were not found to be significant at the pre-test stage or at the post-test stage within Experiment Group.

SOCIALLY PERCEIVED SELF ESTEEM

With regard to the variable *Socially Perceived Self Esteem*, the oneway ANOVA results have revealed that there were significant differences among subjects within the Experiment Group at pre-test and post test stages (p<0.01, F=13.159, Table-25). It has been found that the differences between pre-test and post-test stages among the male subjects as well as among the female subjects of Experiment Group were significant. These results clearly establish that there was significant enhancement in the levels of socially perceived self-esteem of the subjects due to their participation in the mental simulation training programme. The gender differences were, however, not found to be significant either at the pre-test stage or at the post-test stage.

OVERALL SELF ESTEEM

Regarding the variable *Overall Self Esteem* within the Experiment Group the subjects were found to have overall balanced self-esteem both at the pre and post experiment stages. However, at the post experiment stage the subjects of this group i.e. Experiment Group were found to have significantly higher level of both personally perceived self-esteem as well as socially perceived self-esteem.

OVERALL MENTAL SIMULATION ABILITIES

From the results of oneway analysis of variance on the variable *Overall Mental Simulation Abilities* it can be seen that significant differences have been found within the experiment group at pre-test
and post-test stages \((p<0.01, F=5.086, \text{Table-28})\). The results in Table-29 revealed that pursuant to the subjects having participated in the mental simulation training programme, there has been significant increase in their levels of mental simulation abilities. The difference among male and female subjects at pre and post stages were not found to be significant.

**SELECTED BASKETBALL SKILLS**

The results in Table-30 with regard to the selected basketball skills within the Experiment Group have revealed that the differences between pre-stage and post-stage for male as well as female subjects have been found to be significant \((p<0.01\) in all cases). These results indicated that pursuant to mental simulation training, all the subjects of experiment group have reported to have enhanced levels on all the three selected basketball skills i.e. the single hand set shot, jump shot and the lay up shot.

**FINDINGS REGARDING PRE-TEST AND POST TEST STATUS OF OVERALL CONTROL AND OVERALL EXPERIMENT GROUPS ON THE SELECTED PSYCHOLOGICAL VARIABLES**

**OVERALL CONTROL GROUP**

The results regarding the pre-test and post-test status of the overall control group on the variables *Emotional Intelligence*, *Personally Perceived Self-Esteem*, *Socially Perceived Self-Esteem*, *Overall Self-Esteem*, and *Overall Mental Simulation Abilities*, the differences have not being found to be significant.
OVERALL EXPERIMENT GROUP

With regard to the variables *Emotional Intelligence*, *Personally Perceived Self-Esteem*, *Socially Perceived Self-Esteem* and *Overall Mental Simulation Abilities*, the results have revealed that significant differences have been found between pre-test and post-test stages among the subjects of this group (p<0.01 in all cases). With regard to the variable *Overall Self-Esteem*, the subjects have been found to have overall balanced self-esteem both at pre-test and post-test stages.

CONCLUSIONS

On the basis of the findings of this study, the following conclusions have been drawn.

CONCLUSIONS REGARDING POST-TEST DIFFERENCES BETWEEN CONTROL AND EXPERIMENT GROUPS

EMOTIONAL INTELLIGENCE

With regard to the variable Emotional Intelligence significant post experiment differences have been found between control and experiment groups (p<0.01, F-value = 24.062, Table 11). Both male as well as female subjects of the experiment group were found to have significantly higher level of emotional intelligence pursuant to the mental simulation training as compared to their counterparts of control group.

Hypothesis No. 1 that there would be significant post-test differences between control and experiment groups on the variable emotional intelligence, has, therefore, been retained.
PERSONALLY PERCEIVED SELF-ESTEEM

The results of this study have revealed significant post-test differences between the control and experiment groups on the variable Personally Perceived Self-Esteem (F=10.887, p<0.01, Table-13). The subjects of experiment group, both male and female, have been found to have significantly higher level of personally perceived self-esteem.

Hypotheses No. 2 suggesting significant post experiment differences between control and experiment groups on this variable, therefore, stands accepted.

SOCIALLY PERCEIVED SELF-ESTEEM

From the results regarding this variable it has been found that there were significant post-test differences between control and experiment groups (p<0.01, F=8.491, Table-15). The male and female subjects belonging to the experiment group have been found to have significantly higher level of socially perceived self-esteem as compared to male and female subjects of control group.

Hypothesis No. 3, therefore, has been retained.

OVERALL SELF-ESTEEM

With regard to the variable Overall Self-Esteem, although significant post-test increase in the levels of personally perceived and socially perceived self-esteem of experiment group have been found (as is evident from Tables-13 and 15), but overall, the subjects of both control and experiment groups have remained in "Overall Balanced Self-Esteem" category.

Hence, hypothesis No. 4, stands rejected.
OVERALL MENTAL SIMULATION ABILITIES

On the variable *Overall Mental Simulation Abilities*, the post-test differences between the control and experiment groups have been found to be significant ($p<0.01$, $F=13.847$, Table-18). Both male and female subjects of experiment group have been found to have significantly better overall mental simulation abilities than their counterparts of control group.

Hypothesis No. 5, has therefore, been accepted.

SELECTED BASKETBALL SKILLS

From the results of this study, significant post-test differences have been found between the control and experiment groups with regard to the three selected basketball skills ($p<0.01$ in all cases, Table=20). The male and female subjects of experiment group have been found to have significantly better skill levels on all the three selected basketball skills (i.e. single hand set shot, jump shot and lay up shot) as compared to the subjects of control group.

Hypothesis No. 6 suggesting significant post-experiment differences in the skill levels of control and experiment groups, thus, has been retained.

CONCLUSIONS REGARDING GENDER DIFFERENCES WITHIN EXPERIMENT GROUP

EMOTIONAL INTELLIGENCE

The differences between male and female subjects of experiment group have not been found to be significant with regard to the variable emotional intelligence, pursuant to the mental simulation training.
Hypothesis No. 7 propounding significant gender differences within experiment group pursuant to mental simulation training, has been rejected.

PERSONALLY PERCEIVED SELF-ESTEEM

With regard to the variable Personally Perceived Self-Esteem, the gender differences pursuant to mental simulation training, have not been found to be significant within the experiment group.

Hypothesis No. 8, has therefore been rejected.

SOCIA LLY PERCEIVED SELF-ESTEEM

The results relating to this variable have not brought out any significant post-experiment gender differences within the subjects of the experiment group.

Hypothesis No. 9, therefore, stands rejected.

OVERALL SELF-ESTEEM

No significant gender differences have been noticed within the subjects of experiment group pursuant to the mental simulation training.

Hypothesis No. 10 has, therefore been rejected.

OVERALL MENTAL SIMULATION ABILITIES

With regard to the overall mental simulation abilities, no significant gender differences have been noticed which may have occurred pursuant to mental simulation training that was imparted to the experiment group.

Hypothesis No. 11, therefore, stands rejected.
SELECTED BASKETBALL SKILLS

The results of this study have revealed that the subjects of experiment group, both male as well as female subjects, have reported significant increase in their performance levels of three selected basketball skills pursuant to their undergoing mental simulation training (p<0.01 in all the cases, Table-30).

Hypothesis No. 12 has, therefore, been retained.

CONCLUSIONS REGARDING PRE-TEST AND POST-TEST DIFFERENCES WITHIN OVERALL CONTROL AND OVERALL EXPERIMENT GROUPS

CONTROL GROUP

No significant differences have been found between pre test and post-test stages among the subjects of overall control group on all the selected variables pursuant to their routine practice and training.

Hypothesis No. 13 mentioning that there would be no significant differences pursuant to routine training and practice among the subjects of overall control group on all the variable, therefore, stands accepted.

EXPERIMENT GROUP

Significant differences have been found between the pre-test status and post-test status of the subjects of overall experiment group pursuant to their undergoing mental simulation training on the variables Emotional Intelligence, Personally Perceived Self-Esteem, Socially Perceived Self-Esteem, and Overall Mental Simulation
Abilities. However, with regard to Overall Self-Esteem, no significant differences have been found.

Hypothesis No. 14 has, therefore, been partially retained and partially rejected.

**IMPLICATIONS OF THE STUDY**

Mental simulation has been very widely employed by sports psychologists, coaches and trainers to enhance physical skills and abilities, but not many studies have been undertaken to explore the effects of mental simulation abilities on psychological variables which effect sports performance. The present study was undertaken to evaluate the effects of mental simulation training on selected psychological variables and selected basketball skills.

The results of the present study have revealed that there was significant increase in the levels of emotional intelligence of the subjects of experiment group who had participated in the specially designed mental simulation training. These findings need to be seriously considered by all those concerned with selection and training of sportspersons because by now it is well established that emotional intelligence plays a very significant and prominent role in performance enhancement. Appropriately planned mental simulation training programme can be very effectively utilized to enhance the levels of emotional intelligence of the sportspersons irrespective of their gender because in the present study it has been found that both the gender groups have equally gained from the mental simulation training programme.
Self-esteem is another such psychological variable which significantly influences the performance output in sports arena. In the present study it has been found that pursuant to undergoing mental simulation training, the subjects have reported significant increase in their levels of personally perceived as well as socially perceived self esteem and at the same time they have been able to maintain their overall balanced self-esteem. These findings deserve immediate attention of all those who are concerned with sportspersons and their sports performance. With reference to the findings of the present study, appropriate and suitable mental simulation training programmes can be devised and effectively utilized for bolstering up the self-esteem of the players which will go a long way in enhancing their sports performance.

Mental simulation training programme has been found to have increased the levels of mental simulation abilities of the subjects of this study significantly. These findings can be of immense help to the physical educationists, coaches and trainers and they can utilize such training programmes to enhance the levels of mental simulation abilities of the sportspersons which in turn can be utilized employed to enhance their levels with regard to other pertinent psychological variables.

One another significant finding of this study was that the subjects had reported significant increase in the levels of the three selected basketball skills after undergoing the mental simulation training. These findings reveal that physical practice alone is not sufficient to enhance the levels of physical skills involved in the game (because control group had failed to report any significant increase in their basketball skills) but if the same is supplemented with appropriate
and suitable mental simulation training programme, it may produce astounding results. Although there have been few studies on this aspect involving elite players but the findings of the present study have brought out the fact that mental simulation training can do wonders even when provided to the young players. These findings are very important and if the sports persons are introduced to mental simulation training at an early stage they will certainly benefit from the same and by consolidating these gains through systematic and gradual training programme we can hope to produce the world class players.

**SUGGESTIONS FOR FUTURE RESEARCH**

1. Research may be further carried out in continuation of the present study by following up with the long term effects of the mental simulation training on the subjects of the present study.

2. Similar or such studies may be replicated by involving sportspersons from other games so that a comprehensive and conclusive directions and guidelines may be worked out for performance enhancement.

3. Further research may be carried out by studying other pertinent psychological variables separately as well as in tandem with the ones selected for the present study.

4. Similar studies may be undertaken by involving the players of basketball from different places and regions.

5. Further studies may be undertaken to devise appropriate and suitable mental simulation training programmes for different games and sports disciplines.
6. Such studies may be undertaken by involving sportspersons from different age groups and different performance levels.

7. Individualized research studies may be carried out on selected basketball players so that individual specific mental simulation training programmes can also be formulated.