Chapter V

Summary, Conclusions and Recommendations

Summary

The purpose of this research work was to investigate "Relationship of Selected Psychomotor Variables and Performance of Elite Female Handball Players".

The subjects selected for this research were 120 elite female handball players which play at national primer and super leagues in Iran. The selection of the subjects was made on random basis. The subjects selected were in the age range of 18 -25 years.

The selected psychomotor variables comprised explosive power, agility, speed of movement, flexibility, kinesthetic perception, differentiation ability, orientation ability and rhythm ability.

Playing ability in handball was considered as criterion measure. Elite female Handball player's performance-Rating Scale-was prepared by a panel of experts comprising two experienced Handball coaches and a Senior National Level Handball player. With the help of this Rating Scale, the researcher enabled herself to assigning a numerical (quantitative) value to the subjective (qualitative) judgment of the experts.

Tests used to measure selected psychomotor variable included: Sargent jump (Jump and reach test) for measuring explosive power; Speed of movement test measuring speed of movement; Semo-Agility test for measuring agility; Horizontal space test to assessing kinesthetic perception; Upward and Backward movement arms test to measure the flexibility of shoulder and shoulder girdles; Numbered medicine ball run test for determining Orientation ability; Backward medicine ball throw test
for assessing differentiation ability; and Straight and rhythm run test for measuring rhythm ability.

Descriptive statistics was used for psychomotor variables data and elite female handball player's Performance.

Pearson's correlation was used for finding out relationship between psychomotor variables and elite female handball player's Performance in different positions.

One-way ANOVA test was used for finding out significant differences between psychomotor variables and elite female handball player's Performance in different positions and also scheffe post hoc test was performed.

Stepwise multiple Regression analyses were made for psychomotor variables to predict elite female handball player's Performance.

To test the hypothesis, the level of significance was set at .05 level of confidence.

Findings of the investigation revealed that the relationship of explosive power \( r = -.295 \), Speed of Movement \( r = -.188 \), Kinesthetic perception \( r = .217 \), Flexibility \( r = .250 \), and Agility \( r = -.324 \) of the selected psychomotor variables and Rhythm Ability \( r = -.280 \) and Orientation Ability \( r = -.319 \) and of coordinative abilities was found to be statistically significant at level 0.05 level confidence. But result of this study was not found significant correlation between Differentiation Ability \( r = .145 \) and playing ability in handball.

Multiple regression analysis was done in order to develop equations for the prediction of playing ability in handball based on psychomotor variables and coordinative abilities.
Conclusions

Within the limitations of the present study and on the basis of the findings, the following conclusions may be drawn:

1. The results of this study showed significant correlation between elite female handball players performance and Rhythm Ability, Orientation Ability, Flexibility, Kinesthetic perception, Agility, Speed of Movement and Explosive Power.

2. The results of this study showed significant correlation between elite female handball center player's performance and Rhythm Ability, Differentiation, Orientation and Explosive Power.

3. The results of this study showed significant correlation between elite female handball pivot players performance and Differentiation ability, Flexibility and Explosive Power.

4. The results of this study showed significant correlation between elite female handball goalkeeper player's performance and Rhythm Ability, Speed of Movement and Explosive Power.

5. The results of this study showed significant correlation between elite female handball wing player's performance and Flexibility and Explosive Power.

6. The results of this study showed significant correlation between elite female handball back player's performance and Differentiation, Orientation, Agility and Speed of Movement.

7. Results of one way ANOVA test showed there is significant difference between Rhythm Ability and different positions in handball. Back players had significantly higher Rhythm Ability compared to other players.
8. Results of one way ANOVA test showed there is significant difference between Differentiation Ability and different positions in handball. Center players had significantly higher Differentiation Ability compared to other players.

9. Results of one way ANOVA test showed there is significant difference between Orientation Ability and different positions in handball. Both sample from Center and wing players had significantly higher Orientation Ability compared to other players.

10. Results of one way ANOVA test showed there is significant difference between Flexibility and different positions in handball. Center players had significantly higher Flexibility compared to other players.

11. Results of one way ANOVA test showed there is significant difference between kinesthetic perception and different positions in handball. Wing players had significantly higher kinesthetic perception compared to other players.

12. Results of one way ANOVA test showed there is significant difference between Agility in different positions in handball. Pivot, back and center players had significantly higher Agility compared to other players.

13. Results of one way ANOVA test showed there is significant difference between Speed of Movement in different positions in handball. Center and wing players had significantly higher Speed of Movement compared to other players.

14. Results of one way ANOVA test showed there is no significant difference between Explosive Power in different positions in handball.

15. Results of one way ANOVA test showed there is no significant difference between performances in different positions in handball. Center, goalkeeper and pivot players had significantly higher performance compared to other players.
16. Results of step-wise multiple regression analysis for psychomotor variables showed 5 variables best predicted the elite female handball player's performance. The first and foremost variable to predict elite female handball player's performance was Agility with the correlation coefficient of .324 with the contribution of 9.7%. (Beta = 0.324)

17. Results of step-wise multiple regression analysis for psychomotor variables showed only 2 variables best predicted the center player's performance. The first and foremost variable to predict center player's performance was Rhythm Ability with the correlation coefficient of .983 with the contribution of 96.3%. (Beta= 0.983)

18. Results of step-wise multiple regression analysis for psychomotor variables showed only 2 variables best predicted the pivot player's performance. The first and foremost variable to predict pivot player's performance was Explosive Power with the correlation coefficient of .774 with the contribution of 57.7%. (Beta = 0.774)

19. Results of step-wise multiple regression analysis for psychomotor variables showed only 3 variables best predicted the goalkeeper player's performance. The first and foremost variable to predict goalkeeper player's performance was Rhythm Ability with the correlation coefficient of .818 with the contribution of 65%. (Beta= 0.818)

20. Results of step-wise multiple regression analysis for psychomotor variables showed only 2 variables best predicted the wing player's performance. The first and foremost variable to predict wing player's performance was Explosive
Power with the correlation coefficient of .560 with the contribution of 29.2%. (Beta=0.56)

21. Results of step-wise multiple regression analysis for psychomotor variables showed only 3 variables best predicted the back player's performance. The first and foremost variable to predict back player's performance was Speed of Movement with the correlation coefficient of .675 with the contribution of 43.8%. (Beta=0.675)

**Recommendation for Further Research**

In the light of the conclusion drawn, the following recommendations are made:

1. The present study may be repeated taking other psychomotor variables which have not been included in the present investigation.

2. The present study may be undertaken with subjects of age and sex other than those employed in this investigation.

3. The present study may be replicated in other games where the criterion used for performance is the combined contribution of different players in a team.

4. While making selection of potential handball players, the emphasis should be laid on those psychomotor variables which have been found to have significant relationship with playing ability in handball.

5. In the training of handball players, more emphasis should be laid on the enhancement of those psychomotor variables which have been found to be good contributors to playing ability in handball.