Chapter V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

SUMMARY

Today’s modern game of soccer has become more demanding. The competition-related activity of today’s footballers are between 60 and 70 matches per season for international players (for their club and national team, as well as friendly matches), 50 and 60 matches per season for international-level young players, 35 and 40 matches per season for young, talented players who are being groomed for the highest level. Players can cover distances of between 10 and 13 km during a single match: Central defenders: 8 - 10 km, Defenders / outside midfielders: 9 - 12 km, Midfielders: 11 - 13 km, Attackers: 9 - 10 km, of which 5 to 6 km at slow running or walking pace (60 to 70% of MHR [maximum heart rate], 2.5 to 3.5 km of moderate to high-speed running (80 to 90% of MHR), 1.5 to 2.5 km of intense running at the player’s anaerobic threshold (90 to 100% of MHR), 600 to 1200 m of sprinting (50 to 70 sprints), 300 to 400 m of backward running. (FIFA REPORTED, 2002). “Faster, stronger, higher, more technical” This succinct formula perfectly sums up the
development of foot-ball over the last few years. The aim of correct physical preparation in training is to enable the player to use his technical, tactical and mental capacities to the full and for as long as possible throughout the match and even throughout the season. Out of 147 goals in the World cup 2006, 103 goals were scored from taking shot in the goal, header 27 goals, penalties 13 goals, own goals 4 (FIFA REPORTED, 2006). So, the kicking is accepted as one of the greatest weapon of attack in soccer. In Soccer, shooting at the goal is an aspect of kicking and is the means by which goals are scored and so ability of the team to score the goal is accepted as a deciding factor.

It is widely reported in the literature that maximum velocity is attained in instep kicking, for powerful ball kicking, that is to increase the ball velocity and for which the leg strength is essential. There are evidences to prove the speed and accuracy in kicking for shooting at goal and passing depends upon the explosive strength i.e. power of the lower extremities (Asami & Togari 1968; De Proft et al. (1988) and Taiana et al. (1993).

Research finding reveals that strength training increases the concentric and eccentric strength and kicking performance of soccer players, Prins (1978). Stevan (1980), Kanehisa and Miyashita
Research findings also reveals that significant increase in the strength of the legs muscles only lead to minor or no improvement in kick performance De Proft et al. (1988), Aagaard et al. (1993). It is also reported by Trolle et al. (1993), that high resistance training did not improve the speed in kicking performance. However, it is accepted that there is a relationship between there is a relationship between muscle strength and performance due to the fact that that the muscles are directly responsible for increase in the foot velocity. Cabri et al. (1988) found that there was a high correlation between knee flexor and extensor strength as measured by an isokinetic muscle function dynamometer and kicking distance. There was also a significant relationship between hip flexor and extensor strength but this was lower than that for the knee. Poulmedis (1988) and Narci et al. (1988). Experts have also advised that to utilize improvement in muscle strength effectively during the match play, it is important to combine strength training with technical training to enhance the synchronization of force development between the agonist and antagonist muscles in movement specific to soccer. (Reilly, 1996).

Strength training of soccer players was being carried out in the past by employing isotonic method. Since the nature of strength
required to be developed with soccer players was understood to be dynamic, most of the experts in these days employ isokinetic methods using ORTHROTON II Isokinetic exercise system. Since the experts differed in their opinions and also considering the fact that the training programme of Indian Soccer players did not include strength training, so an attempt was made in this study to compare the effect of Eight weeks isokinetic and isotonic strength training on peak torque, torque acceleration energy and power of hip, knee and ankle joint muscles and the kick performance and also to compare their training effects with the eight weeks soccer technique training without including any strength training.

In this experimental study 33 soccer players were randomly assigned, eleven each in three experimental group namely isokinetic strength training group, isotonic strength training group, and technical training group (control group). The training was carried out for eighth weeks as per the programme. The isokinetic and and isotonic group were trained in technique also following the programme of control group (technical training group). All the subject were tested in Cybex 340 Isokinetic dynamometer to assess the peak torque, torque acceleration energy and power of flexors and extensors of hip, knee
and ankle joints and also on the kick performance measure accuracy and distance while kicking with instep of both both the feet and with inner instep of both the feet, before starting the training (pre-training) and on the conclusion of the training (post training). The obtained were analyzed applying statistics.

Conclusions

The results obtained in this study enable the researcher to draw the following conclusion:

1. Isokinetic training for eight weeks combined with technical training and game improved peak torque, power and torque acceleration energy in flexion and extension of right & left leg of hip joint, flexion and extension in right and left leg in knee joint, plantar and dorsi flexion of right and left ankle joint but not in peak torque 45°/sec at extension knee joint of right leg.

2. Isokinetic training on lower limbs muscles for eight weeks combined with technical training and game has improved performance in kicking with the instep of the foot and inner instep of the foot in distance as well as in accuracy.
3. Isotonic training for eight weeks combined with technical training with game improved peak torque, power and torque acceleration energy in flexion and extension of right & left leg of hip joint, flexion and extension in right and left leg in knee joint, plantar and dorsi flexion of right and left ankle joint but not in peak torque 45°/sec at extension knee joint of right leg.

4. Isotonic training on lower limbs muscles for eight weeks combined with technical training and game has improved performance in kicking with the instep of the foot and inner instep of the foot in distance as well as in accuracy.

5. Technical training group with exercises to develop kicking with the inner instep of the foot and instep of the foot and game has improved the performance in distance as well as accuracy in skill tests except kicking with the instep of the foot for accuracy of right leg.

6. Technical training group with exercises to develop kicking with the inner instep of the foot and instep of the foot and game has either improved or stagnation in performance was seen with the exception of torque acceleration energy of extension hip joint of left leg, peak torque & torque acceleration energy of extension
knee joint of left leg where decrease in performance was observed.

7. Isokinetic training on lower limbs muscles for eight weeks combined with technical training and game has improved performance more than the isotonic strength training group in kicking with the instep of the foot distance as well as in accuracy and in with the inner instep of the foot for accuracy.

8. Improvement in Peak Torque, Torque, Acceleration Energy and Power of Hip Flexor & Extensors, Knee Flexors & Extensor, Ankle Planter and Dorsi Flexors are related with kicking with the instep and inner step of the foot for distance as well as accuracy.

Recommendations

1. Similar study may be carried out with National Football teams of various age group during pre-season training for the overall development of physical abilities.

2. Similar study may be carried out by selecting other skill test.

3. Further research may be carried out for developing strength endurance.