A FITNESS EVALUATION OF A COLLEGE SOCCER TEAM DURING PREPARATION FOR A NATIONAL TOURNAMENT

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ABSTRACT

Preparation of teams for competitions is increasingly under the spotlight. Such preparations have to incorporate appropriate scientific principles of coaching if performance is to be optimized. The purpose of this study was to establish if there was any significant improvement in the selected physical fitness components of players after an eight week period of training. Sixteen soccer players were subjected to training while preparing for a national competition. The testing on the components of cardio-respiratory endurance (12 min. run/walk), speed (50 m-dash), leg power (vertical jump), abdominal strength (bent leg sit-ups), and flexibility (sit-and-reach) was done in the 2nd and 9th weeks of the training period. The data collected was descriptively analysed and the dependent 't'-test used to determine the significance of the difference between the pre- and post-test means. The findings showed a significant improvement in the cardio-respiratory endurance, speed, abdominal strength, while the improvement in the leg power and flexibility was not significant. It was concluded that the load administered did not elicit improvement in all the fitness components tested due to the competition oriented training which failed to target all the fitness components given the short period of training prior to competition.

INTRODUCTION

Competitions are physically and psychologically demanding to the participants. In soccer, the emphasis on winning and the competitive spirit of the participants demands a high level of physical conditioning as well as proper psychological, technical and tactical readiness (Asembo & Njororai 1995, Fardy, 1980; Njorarai, 2000). Given such enormous demands, an effective coach utilizes proven scientific principles to guide the training team preparation. Training for sports therefore involves the application of exercise principles which are utilized to prepare the players for strenuous exertion to make the best performance in the most efficient manner and also to recuperate quickly following exertion (Fardy, 1980). It has been established that prolonged heavy exercises over a period of many weeks lead to hypertrophy of the cardiac muscle and the enlargement of muscles of the body in general (Upall, et al. 1982).

For soccer players to have optimum performance in competition, the different components of physical and motor fitness such as speed, strength, endurance, flexibility and agility should be developed (Asembo & Njororai 1995; Okblom 1986, Reilly 1994; Stone and Knoll, 1986, Uppal et al, 1982) to facilitate effective performance, the training programmes should be geared towards the harmonious development of all the physical fitness components required in soccer (Uppal et al., 1982).

To ascertain the level of achievement of the training programme on the various fitness components, an evaluation of the players fitness has to be carried out (Nettleton & Briggs, 1980). The evaluation facilitates a re-appraisal of the training programme to meet the specific inadequencies and strengths of the individual players. It was on this basis that we set out to evaluate the fitness levels of a college soccer team that was preparing for a national tournament in Kenya.

SUBJECTS AND METHOD

SUBJECTS

Sixteen male soccer players of a college team in Kenya who were preparing to take part in a soccer tournament orally consented to serve as subjects for the study. The subjects who were recalled from their respective attachment areas around the country, were accommodated in college hostels. During the residential training the players were exposed to a similar diet.

The subjects trained under supervision for six days a week, two and a half hours a day for a total period of nine weeks. However, the subjects were also advised to run in the morning (three times a week), as a team for a minimum of 3 km. The training sessions, initially involved development of the fitness components such as endurance, speed, agility, flexibility and strength in addition to the techniques of the game. To develop the physical fitness components the following activities were engaged in:- continuous running, circuit training, interval training and calisthenics. By the fourth week of training, the emphasis was laid on technique as well as tactical aspects.

The tests that were used to evaluate the fitness components were 50 meters run (speed) 12 minutes run/walk (cardio-respiratory endurance), vertical jump (leg-power), bent leg sit-ups (abdominal strength) and sit and reach (abdominal flexibility). The tests were administered at the track and hall of the Kenya and Power Lighting Company Club Complex, in Nairobi.

PROCEDURE

Before administering the test items, the subjects were familiarized with the different aspects of it. The subjects were each allowed to have trials before the actual data was collected for the pre-test. In addition, the details of the subjects such as weight, Resting Heart Rate (RHR), height, age were taken before the actual involvement in the test items. After the recording of the biographical data and the familiarization, the subject embarked on the test items in the following order:- 50m sprint, bent leg sit-ups, sit-and-reach, vertical jump and the 12 minute walk/run test. In the sit and reach and vertical jump tests, each subject was allowed 3 trials of which the best score was recorded. For bent leg sit up, each subject was required to perform as many sit ups as possible within 30 seconds. The data were collected during the 3rd week (pre-test) and the 9th week (post-test) of training. Both tests were administered in the afternoons between 3 and 6 p.m. The temperature was between 25-30C. The data collected was analysed descriptively and statistically. To test the mean differences of the pre and post-tests, a 't' – test was employed and the level of significance chosen was .05. The date was presented in a table.

RESULTS

BIOGRAPHICAL DATA

The results for the biographical data of the subjects are presented in Table One.

Table 1: The biographical details of the subjects.

Variable	Pre-Test	Post	't'-Test	Comments
Age (years)	24.1	24.1	-	No change
Height (cm)	172.7	172.7	-	No change
Weight (kg)	70.1	70.4	1.05	NS
RHR(beats per Min.)	76.5	69.1	0.717	S*

*Significant at P<.01 at DF = 15

The subjects did not change in age and height, but marginally increased in weight by 0.43% and their Resting Heart Rate (RHR) significantly improved by 9.7%.

Table 2: Significance of difference of means in selected physical fitness components after training

Variable Unit	Mean Pre	Post	't' Value	Remarks	Magnitude of improvement
50 metres run (secs)	7.1	6.78	3.11	S	4.52%
12 min run/walk (metres)	2625.3	2842.9	2.39	S*	8.3%
Vertical Jump (cm)	50.4	52.6	1.7	NS	4.4%
Bent leg-sit ups (numbers)	19.6	22.6	4.40	S	15.3%
Sit and Reach (cm)	33.1	35.9	1.2	NS	8.5%
Resting Heart Rep. (Number per minute)	76.5	69.1	4.70	S	9.7%

*Significant at .05 level of confidence

't' needed for significance at .01 level with 15 degrees of freedom is 2.947 and at 0.05 is 2.131. Analysis of data in Table 2 reveals that as a result of the training, the players showed significant improvement in 50 metres, dash (speed), 12 min. run/walk (cardio-respiratory endurance), bent leg sit-ups (abdominal strength), and resting heart rate. However, in the cases of vertical jump and the sit and reach, significant changes

were not observed. However, in both tests, the subjects showed slight improvement.

DISCUSSION

Soccer demands a great deal of physical effort on the part of each player. It is therefore, important that the various fitness components are well developed during training. These components include, endurance, speed, abdominal strength, flexibility and explosive strength. The results of this study show that the players improved particularly with regard to their speed, cardio-respiratory endurance and abdominal strength. Although the subjects marginally improved in the leg power and abdominal flexibility, the changes were not significant.

Top performance in competition is only possible if the players devote sufficient time in developing essential components of physical and motor fitness in addition to the perfection of, technique, tactics and psychological competence. For soccer, the training programme should be designed to bring about optimal development in essential components applicable to the game (Uppal, 1982).

It has been established that regular training of sufficient intensity and duration can bring about morphological change after 3 weeks of training (Sharkey, 1990). Thus within the eight weeks between the pretest and the post test, the players showed some improvement. However, the fact that there was minimal improvement in leg power and flexibility, suggest that the training programme was not effective in developing all the soccer related physical fitness components. This could be attributed to the competition oriented training that was administered, where the emphasis was more on techniques, tactics and game specific speed (Mal, 1982).

A proper training programme aims to develop a player in three stages including off-season, preparation and competition phases (Stone, 1990). However, in the present study the training could not systematically go through those stages given the proximity of the competition. Thus the training was competition oriented. Previous studies (Malhotra and Subramanian, 1982) have reported a drop in general physical fitness as a result of competition oriented training. It is therefore possible that the minimal improvement in the areas of vertical jump and Sit and Reach which test explosive strength and abdominal flexibility respectively could be due to insufficient emphasis on developing them during the training. Where proper off-season and pre-competition training is followed, significant improvement in speed endurance, strength, flexibility, explosive strength and dynamic strength have been reported.

Competition oriented training is geared towards improving the general and specific physical fitness of a soccer player as well as the technical, tactical and the psychological preparation of the players. Such a broad-based training programme may tend to lay more emphasis on technical and tactical preparation at the expense of some physical fitness components. There is therefore, a need to include exercises, which are geared towards developing the general fitness of the players just as it is done during the off and pre-season training. The only difference in this case should be the allotment of less time. However, physical components should continue to receive some attention even when the major emphasis is on techniques, tactics and mental preparation.

CONCLUSION

It can be concluded from the present study that the training that the soccer players were subjected to was intensive enough to bring

about significant change in the cardio-respiratory endurance, abdominal strength and speed abilities. However, the load was not adequate in eliciting significant improvement in the abdominal flexibility and the leg power. These results point out the need to incorporate exercises that can target all the physical components of a player apart from laying specific emphasis on technical, tactical and mental preparation. It can therefore be concluded that the load administered did not elicit improvement in all the fitness components tested due to the competition oriented training programme and the short period of training prior to competition.

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