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ORGINAL ARTICLE

Monitoring of the Pre-season Preparatory Training by the Mood Profile and Physical Performance in the Male Soccer Players

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Abstract

The aim of the present study was to monitor the pre-season preparatory training effectiveness by both the mood profile and physical performance. 15 male soccer players mean age 25±2.21 yr, height 180.27±2.58 cm, weight 81.13±5.49 kg and 5 years playing experience voluntary participated in this study. The program combined strength and endurance training, 4 weeks progressive training and the 5th week declining activity (taper period). Assessments of mood and physical performances at first week, end of 4th and 5th weeks were performed. Variance of analysis with repeated measurements showed that the aerobic and anaerobic capacity did not change significantly after progressive training. But after taper period (the decline of training load) both indices increased significantly ($p<0.05$). However, the maximum strength, had significant increase during both the progressive training load and taper periods ($p<0.05$and $p=0 .05$ respectively). Four weeks progressive training load period; had insignificant effect on mood profile except for fatigue. After the taper period, fatigue and mood depression showed significant reduction compared to the beginning of the training period ($p<0.05$, $p< 0.05$ respectively). The overall results show that aerobic and anaerobic capacity compared to the reduction of training load is more sensitive than the time of progressive training load ($p<0.05$ for taper period and $p>0.05$ for time of progressive training load). Among the 6 mood factors, only fatigue and depression have been shown to be more sensitive to the change of training load.

Keywords: Concurrent training, mood, physical performance

Introduction

Actually, the modern soccer needs highly trained players who have high fitness level at the beginning of the championship. . This indicates the importance of pre-season preparation for the athletes and their coaches (Manolopoulos et al., 2006).

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Since the preparatory time in the soccer players before beginning of the matches does not fulfill (Tessitore et al., 2007), the coaches try as much as possible to plan efficient training programs in order to develop appropriate fitness level and avoid the risks of overtraining syndrome which is common among the professional athletes. During the soccer match more than 90% of the activity is performed thanks to the request of the aerobic energetic pathway (Manolopoulos et al., 2006). The players run at least 10 kilometers with an intensity corresponding to the lactate threshold or at 80-90% of the maximal heart rate (Helgerud et al., 2001). Moreover, during soccer match, the players fall down, tackle, jump and strike the ball on head, which demand high level of strength, power and muscular endurance (Manolopoulos et al., 2006). Therefore the concurrent (endurance-strength) training, that sollicitated both aerobic and anaerobic energetic pathways bring to athletes high physical fitness level (Aspenes et al., 2009; Wisløff et al., 1997). For monitoring the effectiveness of training program; physical performance (Foster., 1998; Laursen et al., 2001) and mood scale (Morgan et al., 1987; Morga et al ., 1988) have been used frequently. Indeed, enhancement of physical performance indicates the effectiveness and proper adaptation of the athletes to the training programs (Foster., 1998). Furthermore, assessment of mood condition has been shown also as one of the main tool in monitoring the effectiveness of the training program (Raglin., 1993). Indeed, training load and regular recovery improves the mood (González-Bono et al., 2002). In disturbance, and conducted the players to onset of overreaching and consequently overtraining (Raglin., 1993). Numerous investigations have studied maximum strength assessment, strength related training (Girold et al., 2006; Girold et al., 2007; Tanaka et al., 1993) and aerobic endurance training (Faude etr al., 2008). However, only few studies have interested to the concurrent endurance-strength training program in basketball players (Balabinis et al., 2009), marathon (Jones & Carter., 2000) and cyclists (Tanaka & Swensen., 1998). Literature studies demonstrated that strength training leads neural adaptation improvement and muscular hypertrophy (Girold et al., 2007). However, the endurance training causes improvement of maximal oxygen up-take (Faude et al., 2008), and muscles oxidative capacity (Helgerud wt al., 2007). The concurrent endurance-strength training would thus optimize the impact on the mood indices and physical performances. Considering the lack of knowledge on concurrent endurance-strength training in soccer, particularly related to pre-season matches, the present study aims to investigate the effectiveness of pre-season preparatory training by mood profile and physical performance assessments.

Methods

Subjects

In this study, 15 soccer players; Age (25±2.21 year), height (180.27±5.58 cm) and weight (81.13±5.49 kg) from different soccer clubs of Tehran province were selected by simple purposive method. Informed consent was obtained from the subjects and their health condition was studied before beginning of the training program. They did not have history of any disease and did not use any drug during the training period.

Physical performance assessment

Physical performance includes e maximum strength, e aerobic and anaerobic capacity were assessed by one maximum repeating (1RM), one mile running (1609 meters) and RAST (Running-based Anaerobic Sprint Test) respectively before beginning of the training period and in the 4^{th} week (end of progressive training) and end of the 5^{th} week (end of the declining training). was done in the three phases, after one day rest in a same place, time,

and environment temperature conditions, and.

The mood condition profile assessment

The 24-item mood questionnaire of BRUMS (Lane et al., 2004) was used for assessment the mood profile of the subjects under study. This questionnaire assays the mental confusion, anger, strength, fatigue, depression and tension in the subjects. The Brunel Mood Scale was developed to serve as a brief measure of mood states among adolescent and adult populations. Derived from the Profile of Mood States (McNair, Lorr, & Droppleman, 1992), the BRUMS1 contains 24 simple mood descriptors, such as angry, energetic, nervous, and unhappy. Respondents indicate whether they have experienced such feelings on a 5-point scale (0 = not at all, 1 = a little, 2 = moderately, 3 = quite a bit, 4 = extremely)(Lane et al., 2004).

Training protocol

The trainings were performed during 5 weeks period, 4 weeks of physical fitness development; the 5th week corresponds to the taper training period. The trainings were concurrent combining both strength and endurance schedules.

The strength training

The strength training started with an intensity corresponding to 60% of the 1RM in a circular form and at the beginning of each week 10% was increased to the intensity, till the end of the 4th week, reaches to the 90% of 1RM. At the beginning of 5th week (taper) declined to the 50% of the intensity and 6 repeated,(Table2). Twelve instruments were present in each circle.(BACK PRESSES, MACHNE BENCH PRESSES, PEC DECK FLYS, BACK LAT PULL¬_DOWNS, LEG EXTENSIONS, LYING LEG CURLS, SEATED MACHINE CALF RAISES, MACHINE CRUNCHES, LEG PRESSES, SQUATS, DUMBBEL SQUATS, MACHINE SHRUGS) The progressive training (the first 4 weeks) performed in 3 sets and each set with 12 repeats (table 1).

Table 1. The strength training during the 5 weeks training period

	1st week	2nd week	3rd week	4th week	5th week
Training load	60%1RM 12REP-3SET	70%1RM 12REP-3SET	80%1RM 12REP-3SET	90%1RM 12REP-3SET	50%1RM 6REP-3SET

Endurance training

The endurance training started on treadmill at an intensity corresponding to 60% of the maximal heart beat during 30 minutes. The exercise duration was increased respectively at the beginning of the next weeks at 35, 40 and 45 min and intensity of 70%, 80% and 90% of maximal heart rate. At the beginning of 5th week (taper) the exercise duration declined to 10 minutes. But the intensity remained constant in 90% of the maximal heart rate (table 2).

Table 2. The endurance program during the 5 weeks training period

	1st week	2nd week	3rd week	4th week	5th week
Training load	60%MHR 30MIN	70%MHR 35MIN	80%MHR 40MIN	90%MHR 45MIN	90%MHR 10MIN

Statistical Analysis

All of the obtained data have been reported as mean and standard deviation (mean±SD). One way variance of analysis with repeated measurements was used, according to the three periods to determine the effect of training period on the physical performance and mood of the players. In case of observing significant difference, the paired *t*-test of Bonferroni modified method was used in locates the difference. The value of P<0.05 was considered as significant. All statistical analyses were done using SPSS software.

Results

Physical performance

Aerobic capacity at the end of 4th week had insignificant change (P=0.514). t However, it increased significantly (P<0.05) at the end of 5th week training and taper periods. Insignificant change was observed in the anaerobic capacity in the first 4 weeks training (P=1), but significant increase of aerobic capacity was noticed in the athletes after taper period (P<0.05). Significant changes were demonstrated in the maximum strength after the training period (P<0.05). These changes were maintained during the taper period (P<0.05). Data on the physical performance is given in the table 3.

Table 3. The results of the physical performance at the beginning of the first week, end of the 4th and 5th weeks

	Beginning of the 1st week	End of the 4th week	End of the 5th week
Aerobic capacity y (ml/kg/min)	51.18±2.55	52.54±2.28	53.33±2.6
Anaerobic capacity (W)	394.53±74.75	365.56±154.84	477.53±43.27
Maximum strength (1RM)	85.93±14.81	161.8±27.09	172.53±20.26

Give asterix next to table values to locate the differences (*=p<0.05, comparison between 1st and 4th weeks; §=p<0.05, comparison between 4th and 5th weeks)

The mood profile

Four weeks training period had insignificant effect on the scores of five mood factors such as: mental confusion (P=0.265), anger (P=0.394), strength (P=0.087), depression (P=0.611) and tension (P=0.368). After taper period significant reduction was observed only in fatigue and depression (P<0.05). Significant reduction was observed in fatigue mood after increasing training load (P<0.05). The data on the mood profile are given in the table 4.

Table 4. The results of the mood condition, beginning of the 1st week, end of the 4th and 5th weeks

	Beginning of the 1st week	End of the 4th week	End of the 5th week
Confusion	1.66±1.75	1.067±1.33	0.733±1.58
Anger	0.33±0.49	0.67±1.29	0.33± 1.05
Depression	1.267±1.099	0.667±1.234	0.2±0.560
Fatigue	2.67±1.34	2.53±2.84	0.933±1.39
Tension	0.933±1.49	0.8±0.941	0.67±1.046
Strength	11.4±4.14	9.27±4.93	13.07±3.51

Give asterix next to table values to locate the differences (*=p<0.05, comparison between 1st and 4th weeks; §=p<0.05, comparison between 4th and 5th weeks)

Discussion

The hypothesis of the present study was to determine the effectiveness of pre-season preparatory training of soccer by assessing both mood profile and physical performance. Would you please give the principal results of this study .Review of the literatures on mood and physical performance following training shows that high intense and improper training lead, to mood disturbance and conduct the athletes to overtraining syndrome (Morgan et al., 1988)., The consequence of overtraining syndrome declines physical performance (Morgan et al., 1987). Athletes with inadequate training and recovery face this syndrome and lack physical fitness in performing sport skills (Foster., 1998). Long term is required to get rid of over training syndrome and several time lasts to get rid the side effects of this syndrome (Raglin., 1993). The present study tries to implement the monitoring hypothesis about the pre-season preparatory training by the mood profile and performance in the men soccer players. Designing of the training was in a way that, after progressive training which last 4 weeks, reduction of training load that is, "taper period" started. In our study, physical performance showed significant improvement in all indices of measurement (physical performance and mood states). We found that increase of training load in 4 weeks, though enhanced the aerobic capability but insignificant, after the taper period. Adaptations that may occur as a result of these training methods include, but are not limited to, increased blood volume, increased oxidative capacity of the muscle through increased mitochondrial volume and density, and increased concentration of oxidative enzymes, and increased capillary density (Jones & Carter., 2000).

Findings indicated that anaerobic capacity during increase of training load had insignificant difference, but with significant difference after taper period. Increase of anaerobic capacity following 5weeks training may be due to changes in both the nervous and muscular systems (Abernethy et al., 1994).Our finding revealed that the concurrent progressive training leads to the increase of maximum strength which will continue in the taper period. The other possible reasons particularly of the increase in maximum strength are for enhancing neural stimulation and also learning how to execute movement (Abernethy et al., 1994). Training may decline the spontaneous inhibition of Golgi tendon organs, reduces sensitivity of the receptors (Lac et al., 1993) and leads to gaining of more power (Lac et al., 1993). Our findings revealed that four weeks increase in training load, had insignificant effect on scores of five factors such as: confusion, anger, strength, depression and mood tension, but depression declined significantly after taper period. Fatigue mood index showed significant reduction during increase of training load, and it continued even in the taper period. Various psychological hypotheses have been proposed to explain the beneficial effects of physical activity on mental health, the main being 1) distraction, 2) self-efficacy, and 3) social interaction. The distraction hypothesis (Morgan., 1985) suggests that diversion from unfavorable stimuli leads to an improved mood during and after exercise. The self-efficacy Hypothesis (North et al., 1990) proposes that, since physical exercise can be seen as a challenging activity, the ability to get involved in it in a regular manner might lead to improved mood and self-confidence. With respect to the social interaction hypothesis, (Ransford., 1982) the social relationships commonly inherent in physical activity, as well as the mutual support that occurs among individuals involved in exercise, play an important role in the effects of exercise on mental health. The other probable reasons not to increase mood disturbance and even improving mood indices could be the

balance of training period and the recovery time to the initial condition (Kellmann & Günther., 2000). Also, sufficient recovery during heavy training causes athletes adaptation to maximum training syndrome (Raglin., 1993). Also insufficient recovery time during training is known as the cause of mood disorder (Kellmann & Günther., 2000). Considering the resting interval (48-hr) in the subjects under study it seems that the subjects had complete recovery before beginning of each training (include this condition in the method section). With regard to the obtained data from this study related to the performance indices, it was clear that aerobic and anaerobic capacity sensitive to the reduced training load as compared to the increased training load period. Also the two indices (aerobic and anaerobic capacity) indicated significant difference in performance of this period (load reduction) after progressive training. The maximum strength increased with any change in training load. It can be said that this index is independent to the taper period. Since depression and fatigue mood are the indicators of overtraining and overreaching syndrome (González-Bono et al., 2002) it is concluded those 4 weeks progressive training load does not lead to acquiring overreaching. On the other hand, taper has positive impact on mood. Based on the obtained data of this study, it is suggested that, among six factors, the depression and fatigue are more sensitive to the change of training load.

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