



COMPARISON EFFECT OF TWO DIFFERENT TRAINING METHOD ON AGILITY, ANAEROBIC ENDURANCE, AND SKILLS IN YOUNG ELITE MALE BASKETBALL PLAYERS

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ABSTRACT

Sample group selection, practice method and its intensity are the main factors that lead to changes in young elite basketball player's functional skills; consequently this has an important role in success and proceeds in official basketball champions. Hence the goal of this research is to investigate of effect of two practice method General endurance and power endurance on the agility, anaerobic endurance and base skills (passing, shooting, dribbling) in the young elite basketball players in Khuzestan province. For this purpose, thirty young elite players randomly selected with ages between 15-19 years old and divided in following three groups. 10 players in power endurance group, 10 players in general endurance group and 10 ones in control group. This research was conducted in semi experimental and Application type, using pre test and post test method. Research groups practiced according the defined schedule for 8 week, each 90 min long with heart rate higher than 160-170 pulse per minute. Also general stamina group with heart rate of 130-140 pulse per minute and lower in intensity practiced. The control group practiced normally and followed their training schedule with normal intensity and working load. Deducing statistics, covariance analysis (Manoa) and Toki sequential test had been used for data analysis, also, Assumptions test for meaning full range of $p < 0.05$ was considered. Results from this search showed that methodology and practice schedule of power endurance group obviously caused positive effects on young basketball player's skills relative to other two groups (general endurance & control), so it is recommended to the coaches, body builders and sport managers to take mighty loaded and intense practices in their training schedule for their athletic teams.

Key word: Agility, anaerobic endurance, Basketball skills

Introduction

Basketball is one of the most common group games which has many fans around the world and large number of viewers and the athletes in this sport field has lead to international acceptance of this game. This exciting sport has had advancing motion parallel with other sports in century decades. Significant advances in recent decades in athletic performances support this claim [1]. Basketball is a sport that its changes of game indices and improving of athletic abilities need to attention to the providing affecting physical factors of this sport. So, the task of training teachers in designing and implementation of training is more important and sensitive [2].

Appropriate training in basketball helps to improve the physical capabilities for elite young players and create a good habit of doing exercise. Inappropriate programming and inadequate training for elite youth basketball players result in negative impacts on the development of physical abilities and damage to them. Designing activities (training sessions and samples) is the most important aspects of teachers' work. Coaches, who don't apply planning and appropriate training, don't have willing to achieve their goals.

They begin the season energetic and sure and have big plans for their teams and want to do many things at the same time, but these ideas are going to be lightening duration the season and trainings will become steady and uniformity, so no improvement and progress would achieve [3] Since the young elite basketball players require endurance, strength, agility and power; applying exercise samples and a pattern of physical fitness development in elite youth basketball players is necessary and important. To achieving success in club, national and international basketball competitions, despite the efforts and trying of the athletes, applying the principles and planning scientific programs is needed, So that the athletes achieve to maximum readiness and quality of physical and function [4] For example Siegler and colleagues (2003) have done several study and considered that the achieved successful in the basketball tournament and competition is due to the nature and variety of basketball skills, physical ability, physical fitness and adoption of appropriate training programs and sample [5]. Today, a few researches have been done in designing effective training samples in the success of elite young basketball players in competitions at club, national and international levels. Furthermore, success in basketball fields requires knowledge

of educators and coaches in affecting fitness factors such as strength, endurance, power, speed and agility, flexibility and timing, which is also integrated with the superior technical skills [6].

In elite basketball games, available time motion analysis research shows that adult athletes performed per game 105 high-intensity bouts (85% maximum heart rate, HR) while covering a distance of 991m (in high-intensity) executing 50-60 changes in speed and direction and 40-60 maximal jumps [7], [8]. Additionally, reference [8] have reported mean heart rates of 169 ± 9 bpm ($89 \pm 2\%$ from peak spent with a HR response greater than 85% peak HR. On the other hand references [3], [9] described the physiological characteristics of 30 high-level junior players and concluded that VO_{2max} and anaerobic power values were moderate and the ventilatory threshold was relatively high. These authors also found statistical significant correlations between the mean power outputs calculated in the Wingate test and several technical tests (control dribble, speed dribble, high intensity shuttle run, shuttle run and dribble).

Therefore, it seems clear that the physical fitness of basketball players and, consequently, game performance can be influenced by these two different training approaches and that no literature is available to report these training modalities chronic effects. Thus, the purpose of this study was to identify the effect of 8 weeks of power endurance and general endurance training in power, speed, skill and anaerobic capacity of junior basketball players.

Methods

thirty young elite basketball players in Khuzestan province randomly selected with ages between 15-19 years of age were randomly assigned into three groups: power endurance group (PE, $n = 10$), general endurance group (GE, $n = 10$) and control group (CG, $n = 10$). All the players had the same experience in sports (PE = 5.1 ± 0.6 years; GE = 4.2 ± 0.5 years; CG = 5.1 ± 0.6 years), were of similar height (PE = 1.80 ± 0.02 m; GE = 1.81 ± 0.06 m; CG = 1.82 ± 0.08 m) and weight (PE = 70.4 ± 6.2 kg; GE = 69.2 ± 4.1 kg; CG = 72.1 ± 6.4 kg). Samples were selected among all elite youth basketball players of Khuzestan province that have played in the national and province leagues. The training models were used for 8 weeks in sessions conducted 3 times a week during 90 minutes each.

Training Models**PE – Power Endurance (Intermittent Exercise)**

This training model is based on a basketball game external structure and actual game conditions heart rate values. The basic workload structure was the following: basketball technical and tactical actions during 4×15 min. periods; mean heart rate 160–170 b/min; 3 passive pauses (2×2 min and 1×15 min). In the first part of the training, the main goal was directed to the improvement of ball passing (15 min), the second part to ball dribbling (15 min), and the third part to ball shooting (15 min). Each exercise had the approximate duration of 45–55 s with 15–25 s pauses and was repeated 6 times. The fourth part of the training was directed to the improvement of team tactics (5x5 full-court game). Short pauses (2x2 min) were used for free-throw shooting and a long pause (15 min) was used by the coach to explain tactical work [10].

GE – General Endurance (Continuous Exercise)

This training model is based on time motion analysis data. The drills are planned and performed continuously using situations which generally occurs during the basketball competition, i.e., athletes will never perform high-intensity drills more than 10-15 sec., run farther than 20 m. without a change of direction, perform less than 50-60 high-intensity jumps [8]. The main focus was on active defiance during the exercises and the drills have been chosen from the most usual basketball game situation, e.g., plays 1×1; 2×2, 3×3. The training sessions consisted of 6 exercises repeated 15 times; with an approximate duration of 10–15 s and 15 s pauses; mean heart rate 130–140 b/min. Each exercise lasted for approximately 10 min. for a 60 min. total time. The main goals of these exercises were the improvement of ball passing, dribbling and shooting. Short active pauses of 10 free-throws were done between exercises. The remaining 30 min. of the training session were accounted to tactical work (5x5 full court game) [10].

CG – Regular Basketball Training

During this training period the coaches planned the workouts with regular basketball skills, drills and game periods according to the program usually applied by the Khuzestan basketball schools. In this Program, coaches are advised to plan the following typical parts of the training sessions: warming up (up to 20 min.); exercises for the improvement of individual technical actions (up to 40 min., ball dribble for 10 min., shooting for 20 min. and passing for 10 min.); tactical training (up to 30 min.) [10].

Testing

Subjects had all the same type of training in the pre-season (during 4 weeks). Then, the training models were applied on the two experimental groups during 8 weeks in the competition period. The average training time intended for endurance development was similar in all groups (PE = 56.8 min GE 52.8 min and CG = 57.4 min). Field testing was performed at the same hours in the same indoor terrain for the pretest and for the posttest. Standard tests to measure the variables of the study were as follows: to measuring the subjects' agility, the Symu test and in order to measuring anaerobic endurance the touch the lines of basketball playground, and to measuring shooting, dribbling and passing skills the standardized tests of APPHRD were used.

Data Analysis

This research was conducted in semi experimental and Application type, using pre test and post test method. For statistical analysis, a 3 (PE, GE, CG) × 2 (pretest, posttest) repeated measures covariance analysis (Manova) was carried out using group and trial as factors (between and within factors, respectively). A Tukey post-hoc test was used to identify differences between groups and trials. All data undergoing ANOVA were tested for assumptions of normality, homogeneity of variance and covariance matrices and sphericity. Neither assumption was violated. Statistical significance was set at 5%.

Results AND Discussion

The main purpose of this study was to identify the effects of two basketball training models in players' power index, speed, skill and anaerobic capacity. Our results showed that both endurance power and general endurance training had significant effects on the agility, anaerobic endurance and selected skills of young elite players of basketball. On the other hand, the results showed that power

endurance training had more positive effect on the mentioned factors than general endurance training.

The results of the present study showed that eight weeks endurance power and general endurance training had significant effect on the players' agility than the control group. These results are supported by references [11], [12], [6], [4].

The results of the present study also showed that eight weeks endurance power and general endurance training had significant positive effect on the players' anaerobic endurance of experimental group in comparison with control group. These results are accordance with the results of references [4], [12], [3], [1], [10].

The results also showed that eight weeks endurance power and general endurance training had significant positive effect on the experimental group compared with control group. These sections of results are consistence with the findings of references [13], [14], [3], [4] and rejected by [8], [10] references results. Possible reasons for differences between studies results may be the geographical factors of the test environment, the level of physical fitness of samples, players, genetics and nutrition variables of learners, geographical location of the study and the duration of the test.

Eight weeks endurance power and general endurance training had significant positive effect on the players' basketball shooting of the training group in comparison with the control group. These findings are accordance with the [15], [3], [4], [10], [12] references results.

References [16], [17] believes that the elite young basketball players must achieve the feeling that during dribbling, the ball is as tail of them hand, and state that good dribbling is as a mark of improvement of young player as well as an elite one.

Eight weeks endurance power and general endurance exercise had significant positive effect on the dribbling skill of the experimental group compared with the control group of young elite basketball players. This part of results supports the findings of the references [1], [3], [4], [10] while rejects the [8], [19] references results. The existence differences between results can cause genetic differences, the subjects of nutrition status, environmental and geographic conditions, or resting and activities conditions of subjects before and after the research tests.

Conclusion

Evaluation the physiological requirements during a basketball game are difficult and therefore there is limited information in this issue. A few studies actually have examined psychological needs, especially during youth basketball tournament. Knowing physical condition of the basketball players includes wide and important section of basketball training programs and overshadows planning of technical, tactical and strategies programs of the team. In the basketball game, regarding the nature and diversity of its skills, the physical ability and fitness of the players have an essential role in better executing the skills.

The importance of these points, thrive the coaches and trainers to put achievement the success in elite youth basketball games based on their physical fitness. In overall, the aim of the present study was to comparing the effects of power and general endurance training on the agility, anaerobic endurance, shooting, dribbling and passing of basketball in elite young basketball players of the Khuzestan province. The results showed that Eight weeks endurance power exercise on exercise group

Despite the good response to physiological needs and their physical fitness, it also will lead to improve and development of the shooting, dribbling, passing and basic skills of basketball. Therefore, exercise programs and training method of power endurance lead to more improvement in agility, aerobic endurance, and techniques and progress in the development and increasing agility, anaerobic endurance and basic skills of basketball such as passing, shooting and dribbling elite young basketball players in Khuzestan at post-test phase in comparison with general endurance training.

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