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THE ACUTE EFFECT OF ACTIVE AND PASSIVE RECOVERY ON SHOOT PERFORMANCE IN YOUNG MALE BASKETBALL PLAYERS

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Abstract:
The aim of this study is to examine the acute effect of active and passive recovery on shooting performance in basketball players. The experimental model, one of the quantitative research methods, was used in the research. 12 male athletes of a club competing in the U16 category of Gaziantep province were included in the study. RAST test and AAHPERD basketball rapid shot test were used as data collection tools in the research. On the first day of the study, which was divided into three training sessions, the athletes passed the AAHPERD basketball fast shot test without rest after the RAST test, and the data obtained from the RAST test and the shot test were recorded. On the second day, the athletes who took active rest after the RAST test again passed the AAHPERD basketball fast shot test and the data were recorded. On the third day, passive listening was performed after the RAST test and the data of the athletes who took the AAHPERD basketball rapid test were recorded. The obtained data were analyzed using the appropriate statistical methods in the SPSS 25.00 package program. As a result of the analysis of the data, a significant difference was found in favor of active and passive recovery when the shooting performance without rest and the shooting performance after active and passive recovery were compared ($p \leq 0.05$). On the other hand, no significant difference was found between active and passive recovery in terms of shooting performances. As a result, it has been observed that active or passive recovery does not have an acutely different effect on shooting performance.

Keywords: active recovery, passive recovery, fatigue, shooting

1. Introduction

Sports are defined as activities that provide mental development and physical development, which include many branches, individually and as a team, generally based

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on competition, including physical strength and intelligence factor. Even though it is mostly done for competition and entertainment today, it has existed from basic movements that emerged while people were meeting their basic needs before (1).

Basketball is one of the most popular team sports in the world after football. This sport, which has an intense audience, is a sport played in all age categories, both boys and girls. Basketball is a sport played in four periods of ten 10 minutes, consisting of two teams of five players. This sport is increasing its audience day by day by taking part in major sports organizations such as the Olympics (2).

The training includes various trainings and studies that the athlete does in order to prepare for the competition at the highest level physically, biologically and psychologically. With training, it is aimed to push the limits as much as possible and to carry the existing level higher. The beneficial effect of training is seen by doing it at certain time intervals and by allowing the athlete to recover, rising above the previous level. In order to remain a healthy individual, the organism must be in a state of equilibrium. This situation can be achieved by doing intermittent exercises in terms of physical, biological and psychological aspects, which are beneficial effects of training (3).

The return of the body to its normal state after physical activities is called recovery. It is called the recovery of the body after physical activities by renewing itself physically and spiritually (4).

With the right recovery methods, the athlete's energy stores recover faster. Recovery methods made with the wrong techniques can lead to important results such as injury to the athlete and may cause low efficiency in terms of the branch (5).

There are various recovery techniques. There are different recovery methods such as active recovery, passive recovery, thermotherapy, cryotherapy and massage. (6). When we look at the previous studies, it has been determined that active recovery is the most effective recovery method in lactic acid excretion and recovery compared to other recovery methods (7).

Laktik asit atılımı antrenmanlar sonrasında oldukça önemlidir ayrıca toparlanma ile sağlanan sıvı ve enerji dengesinin düzenlenmesi ile oksijen borçlanmasının düzeltilmesi oldukça önemlidir (8).

In this study, it is aimed to examine the acute effect of active and passive recovery on shooting performance in basketball players.

2. Material and Method

The experimental model, one of the quantitative research methods, was used in this study. In this context, data were collected from the players of the U16 basketball team of a club competing in Gaziantep. Before measuring the shooting performance of the athletes, the RAST (Running-based Anaerobic Sprint Test) test developed by Draper and Whyte (1997) was applied for fatigue. In the raster test, the running times of the athletes were noted and the fatigue indexes were calculated. In the shooting part of the study,

AAHPERD basketball fast shooting test was used. The study was applied to the athletes in 3 training sessions, one day apart, within 1 week.

After the RAST test was applied to the athletes on the first day of habituation, the first day was ended by having the AAHPERD basketball rapid shot test performed directly without rest.

On the second day of the study, after first applying the RAST test to the athletes, they were given active rest with jog running. Finally, the shooting performances were measured with the AAHPERD basketball fast shooting test, and the second day was concluded.

On the third day, all of the athletes were given a RAST test, and then passive rest at room temperature, unlike the second day. Shooting performances were measured with the AAHPERD basketball rapid shot test and ended on the third day.

The obtained data were analyzed using the appropriate statistical methods in the SPSS 25.00 package program.

The universe of the research is the athletes playing basketball around the world. The sample of the research is the U16 basketball team players of a club in Gaziantep. 12 male basketball players in this team were studied.

2.1 Collection of Data

2.1.1 RAST (Running-based Anaerobic Sprint test) test

After warming up, the RAST test developed by Draper and Whyte (1997) was applied to fatigue before resting and to calculate fatigue indexes. Athletes ran 6x35 meters with 10-second intervals and it was noted how many seconds they ran each 35 meters. Afterwards, the athletes' 35-meter running times and fatigue indexes and power parameters were calculated with the algorithms specified earlier [(Power: body weight x distance run2 / time 3 (s), Fatigue index: maximum power- minimum power / total time of 6 runs (s).)] (9).

2.1.2 AAHPERD basketball quick shot test

In this study, the AAHPERD basketball rapid shot test, which is a part of the AAHPERD basketball test, was used to measure the shooting performance of the athletes. With the RAST test, after the athletes got tired, shots were shot for 60 seconds from the points determined at a distance of 4.57 cm and 5 equal distances from the hoop. After the athletes started to shoot with the start command, they got 2 points for each accurate shot and 1 point for their missed shots for 60 seconds. Athletes also had the right to complete with 4 layups after the shot that did not enter within 60 seconds, but they do not have the right to throw a layup from two regions in a row, and even if the second layup was successful, no points were awarded. Shots completed with the layup are again given 2 points. In addition, when the athletes make incorrect walking or tourniquet steps between the shooting zones, no points are awarded even if their shots are accurate (10). Then, the relationship between the scores of the athletes in the shooting test and the fatigue indexes of the RAST test were examined.

2.2 Statistical Analysis

SPSS 25.00 package program was used in the analysis of the obtained data. Shapiro Wilk test was used for the normality tests of the data. While parametric tests were used for normally distributed data sets, nonparametric tests were used for non-normally distributed data sets. The descriptive parameters of the athletes are presented in the form of minimum maximum values and averages. A 95% confidence interval was preferred to detect significant differences between data sets.

3. Results

In this section, the results of the analysis of the data obtained from the study are presented in tables.

Table 4.1: Descriptive parameters of the participants

	N	Min.	Max.	Mean.	Std. Dev.
Age	12	15	16	15,33	0,492
Weight kg		56	98	74,50	11,836
Height cm		176	197	185,50	6,008

When Table 4.1 is examined, the participants were 12 people in total, the average age of the participants was 15.33 ± 0.492, their body weight average was 74.50 ± 11.836 kg. and their height is 185.50 ± 6.008 cm. appears to be.

Table 4.2: Comparison of active, passive and restless shooting performances of the participants One Way Anova Test

	N	Mean.	Std. Dev.	f	P	Sig. dif.
1. No rest	12	11,50	2,747	10,25	**0.001**	1-2, 1-3
2. Active rest		14,08	1,881			
3. Passive rest		15,25	1,357			

In Table 4.2, shooting performances after rest, active and passive recovery are compared. A significant difference was found in favor of active and passive recovery ($p \leq 0.05$) when the shooting performance without rest was compared with the shooting performance after active and passive recovery. On the other hand, no significant difference was found between active and passive recovery in terms of shooting performances.

Table 4.3: Comparison of participants' fatigue index values in terms of trial days Krusskall Wallis test

	N	Median (Q1-Q3)			H	P	Sig. dif.
		Q1	Q2	Q3			
1. No rest	12	5,80	7.05	8.13	2.75	0.253	-
2. Active rest							
3. Passive rest							

When Table 4.3 is examined, no statistically significant difference was found between the days of the trials in the fatigue index values applied before the shooting performances.

4. Discussion

In this section, the findings obtained as a result of the research are discussed by comparing them with similar studies in the literature.

As a result of the research, when the shooting performances of the athletes after active or passive recovery were compared with the shooting performances without rest, a statistically significant difference was found in favor of the recovery days. In addition, when the shooting performances after active and passive recovery were compared, no statistical difference was found between the groups.

Mülazımoğlu (2012) in his study examining the effect of fatigue on shooting technique in young basketball players stated that fatigue negatively affects shooting performance (9).

Lyons et al. (2006) reported that fatigue affected the passing performance negatively in both groups in their study, in which they examined the effect of total body fatigue on the passing performance of young and elite athletes. However, they stated that elite basketball players were less affected by fatigue than rookie basketball players (13).
In the study of Uygur et al. (2010), in which they examined the effect of fatigue on free throw kinematics, they stated that fatigue did not affect free throw kinematics and was not an important factor (14).

Gülü et al. (2021), in their study in which they examined the relationship between running distance and technical parameters in basketball, stated that the longer the players stay in the game during the match, the higher the fatigue and the decrease in their shooting percentage (15).

Kılıç (2010), in his study examining the effects of basketball tournament on muscle damage and recovery time, reported that athletes who take 10 minutes of active rest return to normal more quickly than those who do passive rest (16).

Kayhan (2014) stated that eccentric exercises cause muscle damage and this causes delayed muscle pain in his study, in which he examined the effects of delayed muscle soreness after eccentric exercise on some biochemical parameters and shot percentage in basketball players. In addition, he reported that although the effect of delayed muscle soreness on shooting percentage was not statistically significant, it negatively affected shooting performance (17).

Yıldız (2019), in his study examining the effects of physical activity level on sleep quality, fatigue and anger levels, reported that with an increase in physical activity, fatigue decreases, but sleep quality decreases. He also stated that anger control increased (18).

In his study, Sert (2015) examined some factors affecting the shooting percentage in indoor football players and stated that the highest shooting average was achieved at the level where the athlete's fatigue was the lowest, isolated from sound and light (19).

Korkmaz (2010), in his study examining the relationship between long-term fatigue and muscle damage in athletes, reported that competitions requiring high effort lead to fatigue and decreased performance as a result of fatigue (20).

Tokat (2018), in his study examining the effects of different recovery protocols applied after intense exercise on some physiological parameters, stated that the most effective technique among the recovery techniques applied after high-intensity exercises is active recovery (21).

Çetinkaya (2019), in his study comparing some motoric characteristics of basketball players in different infrastructure categories and their shooting hits according to age and gender, stated that according to the AAHPERD rapid basketball shooting test results applied to different age groups, the percentage of shooting hits increases as the age category increases (22).

As a result, it can be said that if the recovery is not fully realized, the shooting performance will be adversely affected by this situation, whereas the choice of either active or passive resting may affect the shooting performance positively.

Conflict of Interest Statement

There are no potential conflicts of interest in this article.

About the Authors

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