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EXAMINATION OF THE IMPACT OF 8-WEEK PLYOMETRIC TRAINING APPLIED ON YOUNG FOOTBALL PLAYERS ON CERTAIN SELECTED MOTORIC PARAMETERS

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ABSTRACT

In this study, it has been aimed to determine whether the 8-week specially designed plyometric training has an impact on certain selected motoric parameters of young football players. 30 certified athletes who play football in Istanbul Sultanbeyli Belediyespor Club Youth Academy that have been selected by random sampling method participated to the study voluntarily. Before and after 8-week of plyometric training, 30 m sprint, medicine ball sit-up throw, push-up, pull-up, plank and standing long jump measurements of the players have been taken. After the 8-week training program, the differences between the pre-test and the post-test and the intra-group and between-group of the study and control groups have been examined. Paired-Samples t-test has been used for pre-test and post-test analyses. The findings have been evaluated at the confidence interval of 95% and at the significance level of 5% (0.05). It has been found that as a result of the 8-week plyometric training, only the standing long jump performances of the players in the study group have developed among the selected motor parameters. As a result, it has been thought that plyometric trainings that will be carried out in addition to the 8-week football trainings will contribute to the explosive power of the athletes, that is to say, the standing long jump performances.

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INTRODUCTION

Today, football is the most popular branch of sport in our country as it is in many countries in the world. As in developed countries, sports clubs attach great importance to the youth academies to make football inclusive to all and football schools and courses which belong to sports clubs or individuals have been increasing in numbers rapidly in recent periods. Although these schools and courses in our country do not use training techniques based on a scientific basis, we think that this process cannot be overlooked in the process. Therefore, it is certain that these schools and courses will provide important contributions to the future of football in our country. The training programs which planned by considering the scientific data will contribute greatly to the development of

the athletes from physical and technical aspects. The increase in the efficiency of the athlete may vary according to the quality and quantity of the training programs which are applied. As for the different sports branches, active physical training towards the development of motor skills is in the forefront in terms of football as well. The main objective of a well-planned and effective training program is to improve the physical and physiological efficiency of football players. In sports such as football, which require frequent changes of direction, quick power is the determinant of performance. Plyometric exercises are used for the development of quick power, jumping ability and leg power of the athletes (Kılıç, 2008).

Table 1. 8-week Plyometric Training Program

Exercise Type	Duration / Number of Jumps	Set Number	Resting Between the Sets
Rope Jumping	45''	2	1 – 2 min.
Double Leg Jump Without Arm Involvement	10 reps	2	1 – 2 min.
Double Leg Jump with Arm Involvement	10 reps	2	1 – 2 min.
Side to Side Hurdle Jumps	10 reps	2	1 – 2 min.
Standing Long Jump with Change in Direction	10 reps	2	1 – 2 min.
Box Jump	10 eps	2	1–2 min.

Table 1. Descriptive statistical table of the athletes participating in the study

Variable	n	Minimum	Maximum	Mean \pm Std. (X \pm Ss)
Age (year)	30	14	16	15 \pm 2,86
Height (cm)	30	1,40	1,76	1,55 \pm ,090
Weight (kg)	30	44,00	75,00	64,81 \pm 11,33

cm: centimeter, kg: kilogram

Table 2. Pre-test comparison table of study and control groups

Variables	n	Control Group Pre- test X \pm SS	Study Group Pre-test X \pm SS	t	p
30 Meter Sprint Test	30	2,56 \pm 0,61	2,53 \pm 0,33	,507	,588
Ball Sit-up Throw	30	268,66 \pm 25,01	266,21 \pm 28,36	,682	,453
Plank	30	1,60 \pm ,571	1,60 \pm ,571	-,957	,341
Push-up	30	15,02 \pm 6,69	15,02 \pm 6,69	-,118	,874
Pull-up	30	21,82 \pm 4,22	21,82 \pm 4,22	-,376	,780
Standing Long jump	30	198,80 \pm 21,82	196,80 \pm 15,24	,684	,258

Table 3. Pre-test post-test comparison of the study group

	n	Study Group Pre-test X \pm SS	Study Group Post-test X \pm SS	t	p
30 Meter Sprint Test	30	2,53 \pm 0,33	2,49 \pm 1,23	,588	,507
Ball Sit-up Throw	30	266,21 \pm 28,36	269,34 \pm 25,12	,453	,682
Plank	30	1,60 \pm ,571	1,62 \pm ,128	,341	-,957
Push-up	30	15,02 \pm 6,69	18,56 \pm 5,68	,874	-,118
Pull-up	30	21,82 \pm 4,22	23,51 \pm 3,41	,780	-,376
Standing Long jump	30	196,80 \pm 15,24	203,11 \pm 12,68	,258	,004

Table 4. Pre-test post-test comparison of the control group

Variables	n	Control Group Pre-test X \pm SS	Control Group Post-test X \pm SS	t	p
30 Meter Sprint Test	30	2,56 \pm 0,61	2,55 \pm 0,23	,365	,571
Ball Sit-up Throw	30	268,66 \pm 25,01	270,58 \pm 18,41	,458	,305
Plank	30	1,60 \pm ,571	1,63 \pm ,274	,652	,558
Push-up	30	15,02 \pm 6,69	17,78 \pm 3,45	,861	,463
Pull-up	30	21,82 \pm 4,22	23,41 \pm 5,20	,145	,125
Standing Long Jump	30	198,80 \pm 21,82	201,33 \pm 20,12	,745	,845

METHOD

30 certified athletes who play football in Istanbul Sultanbeyli Belediyespor Club Youth Academy that have been selected by random sampling method participated to the study voluntarily. The study group consisted of 15 athletes in the age range of 14-16 years. Pre-tests of the football players in the study group have been taken. In addition to the football training program, a training program which consists of 6 plyometric movements has been carried out by two trainers during 8-week training two days a week. Post-test measurements of the football players have been taken after 8-week of training. The control group consisted of 15 athletes in the age range of 14-16 years. Pre-test measurements which have taken from the study group, have also been taken from the control group by the same trainers and then routine training has been carried out without any additional training. At the end of 8-week, post-test measurements of the control group have been taken. The obtained SPSS has been recorded in the package program. As a statistical procedure, the differences between the pre-test and the post-test and the intra-group and between-group of the

study and control groups have been examined after the 8-week training program. Paired-Samples t-test has been used for pretest and posttest analyses.

Findings

In the pre-test comparisons of young athletes in the control and study groups participating the study no statistical significance has been found. At the end of 8-week plyometric training, a statistically significant difference has been found in the standing long jump performance of the young athletes participating in the study ($p < 0.05$). In the 30 m sprint, ball sit-up throw, plank and push-up performances no statistically significant difference has been found. No statistically significant difference has been found in the 30 m sprint, ball sit-up throw, plank and push-up performances no statistically significant difference has been found.

DISCUSSION AND CONCLUSION

In the study that we have conducted for the purpose of determining the impact of the specially designed 8-week

plyometric training on motoric parameters of young football players. When the literature and the studies conducted on young football players have been examined, it has been seen that Bozkurt (2000), has found that the vertical jump average is 40, 18 cm, the flexibility is 29, 88 and 30 m sprint time is 5.34 sec. Toktaş and Gökhan (2012) have determined the young football players' 30 m sprint values as 4.45 sec and flexibility values as 28.06 cm.

Again, Köklü *et al.* (2009) have reported that the 10 m sprint average of young footballers as 1.70 sec and that of 30 m sprint average as 4.10 sec. Polat *et al.* (2003) have determined the vertical jump of the football players as 47, 78 cm, leg power as 115, 66 kg and 30 m sprint values as 4.84 s in the study conducted with 37 football players in the age group of 15. When the values obtained in this study from 15-year-old football players with the related literature, some results share similarities and some results differ. Alptekin *et al.* (2013) have examined the impact of the 8-week plyometric training program applied on sprint and jump performance and they have stated that the plyometric training applied on male football players for two days a week during 8-week training has a positive impact on the ability to jump.

This result demonstrates parallelism with our study. Villarreal *et al.* (2013) have investigated the impact of maximal strength and heavy resistance trainings combined with plyometric training on improving sprint performance and after 7 weeks they have stated that there is a significant improvement in speed performance. Anıl (1997) have found statistically significant differences between the 30 m sprint values prior to plyometric training and 30 m sprint values after the training which has been applied to a 14-16-year group of female basketball players ($p < 0.01$). These results do not demonstrate parallelism with our study. In a study conducted, statically significant differences have been observed between the long jump pre-test and post-test results of the athletes who have been subjected to plyometric training (experimental group) for 8-week, in addition to the handball training (Bicer *et al.*, 2004). Our study has shown parallelism with the literature. Vassil and Bazanovk (2011) have examined the impact of plyometric training on strength characteristics of young volleyballs applied during the normal training period.

A total of 21 volleyball players, 12 males and 9 females, have participated in the study. These players have been subjected to plyometric training twice weekly for 16 weeks. As a result, no statistically significant result have found in terms of standing long jump, step and jump and maximal vertical jump performances, which are the indicators of leg explosive power. Our study has parallels with this study that is in the literature. Football is a branch of sports that includes asymmetric conditions, and sudden changes of direction. In terms of these sudden changes of directions, jumps and stoppings the anaerobic power of the athletes' plays an important role. Plyometric trainings are important in terms of the development of anaerobic power and protection of the anaerobic power which has acquired. We can clearly state that the development of the explosive powers of football players by plyometric trainings and is an effective method of training with regard to sudden stops, direction changes and jumps. As a result, the plyometric training which will be carried out in addition to the 8-week football training is thought to be contributive for the

explosive power of the athletes, that is to say, to the standing long jump performances.

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