The Effects of High Intensity Short Rest Resistance Exercise on Muscle Damage Markers in Men and Women

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AMAÇ

YÜKSEK ŞİDDETLİ KUVVET ANTRENMANLARI – KAS HASARI ↑ NÖRO ENDOKRİN CEVAPLAR ↑

Diğer egzersiz bileşenleri sabit tutulduğunda, dinlenme aralıkları yine nöroendokrin cevapları etkilemektedir ! ..

KADIN ERKEK CEVAPLARI FARKLI !..

METOT

- Katılımcılar;

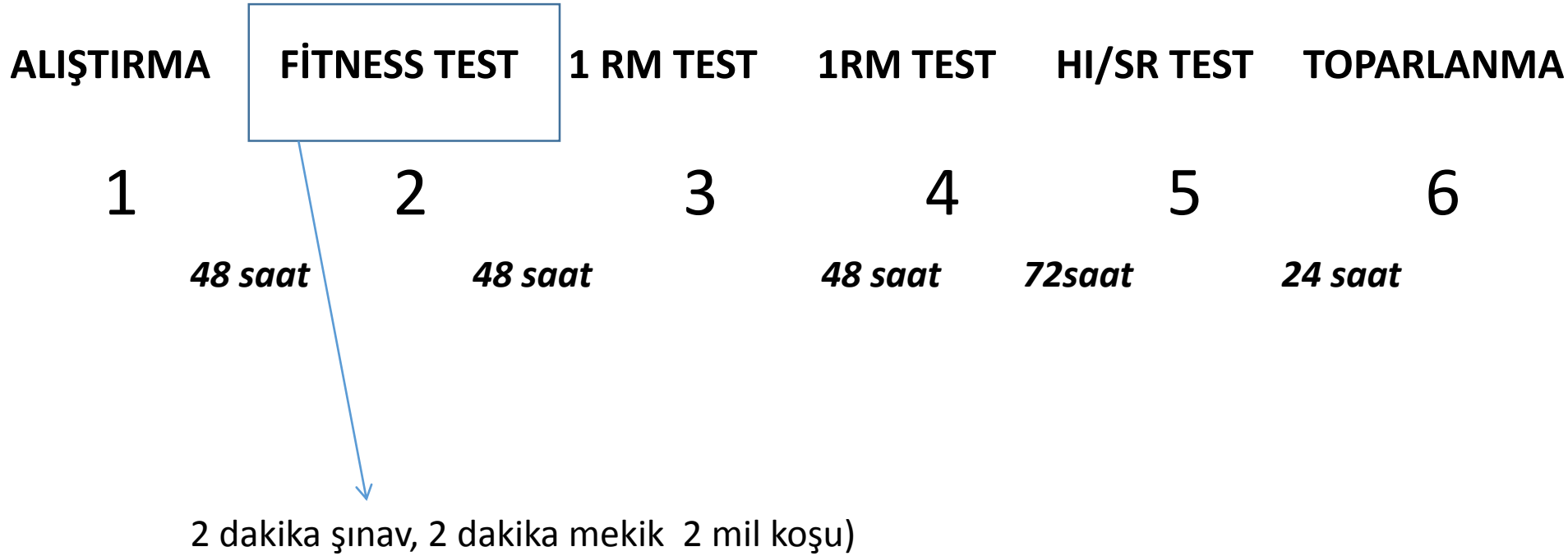
TABLE 1. Subject anthropometrics and 1 repetition maximum strength.*

Subjects	Age (y)	Weight (kg)	Height (cm)	Body fat (%)	Back squat 1RM (kg)†	Bench press 1RM (kg)†	Deadlift 1RM (kg)†
Men	23.6 ± 3.5	77.8 ± 8.8	172.4 ± 4	9.3 ± 3.3	130.3 ± 15	97 ± 20.4	146.5 ± 27
Women	22.9 ± 2	68.6 ± 10.4	168.6 ± 9.4	13.6 ± 3.3	81 ± 15.2	50.5 ± 12.2	92.4 ± 19

*Data are presented as mean ± *SD*.
†1RM = 1 repetition maximum.

- 9 ERKEK 9 KADIN
- SON 6 AYDA HAFTADA EN AZ 2 GÜN KUVVET ANTRENAMI YAPMIŞ KİŞİLER
- DAHA ÖNCE HI/SR protokulunu uygulamak

METOT


ALIŞTIRMA
FİTNESS TEST
1 RM TEST
1RM TEST
HI/SR TEST
TOPARLANMA
1
2
3
4
5
6
48 saat
48 saat
48 saat
72saat
24 saat
2 dakika şınav, 2 dakika mekik 2 mil koşu)

METOT

ALIŞTIRMA	FİTNESS TEST	1 RM TEST	1RM TEST	HI/SR TEST	TOPARLANMA
1	2	3	4	5	6
	48 saat	***48 saat***	***48 saat***	***72saat***	***24 saat***

10 Tekrar * back squat, bench press dead lift
9 Tekrar
”
”
”
”
”
”
1 Tekrar

1RM %75

ERKEK %63
KADIN %52 ile tamamlandı.

METOT

KAN ÖRNEKLERİ;

EGZERSİZ ÖNCESİ; EGZERSİZHEMEN SONRASI +15 +60 +24 saat

TESTESTERON MYOGLOBİN IL6 ve CK

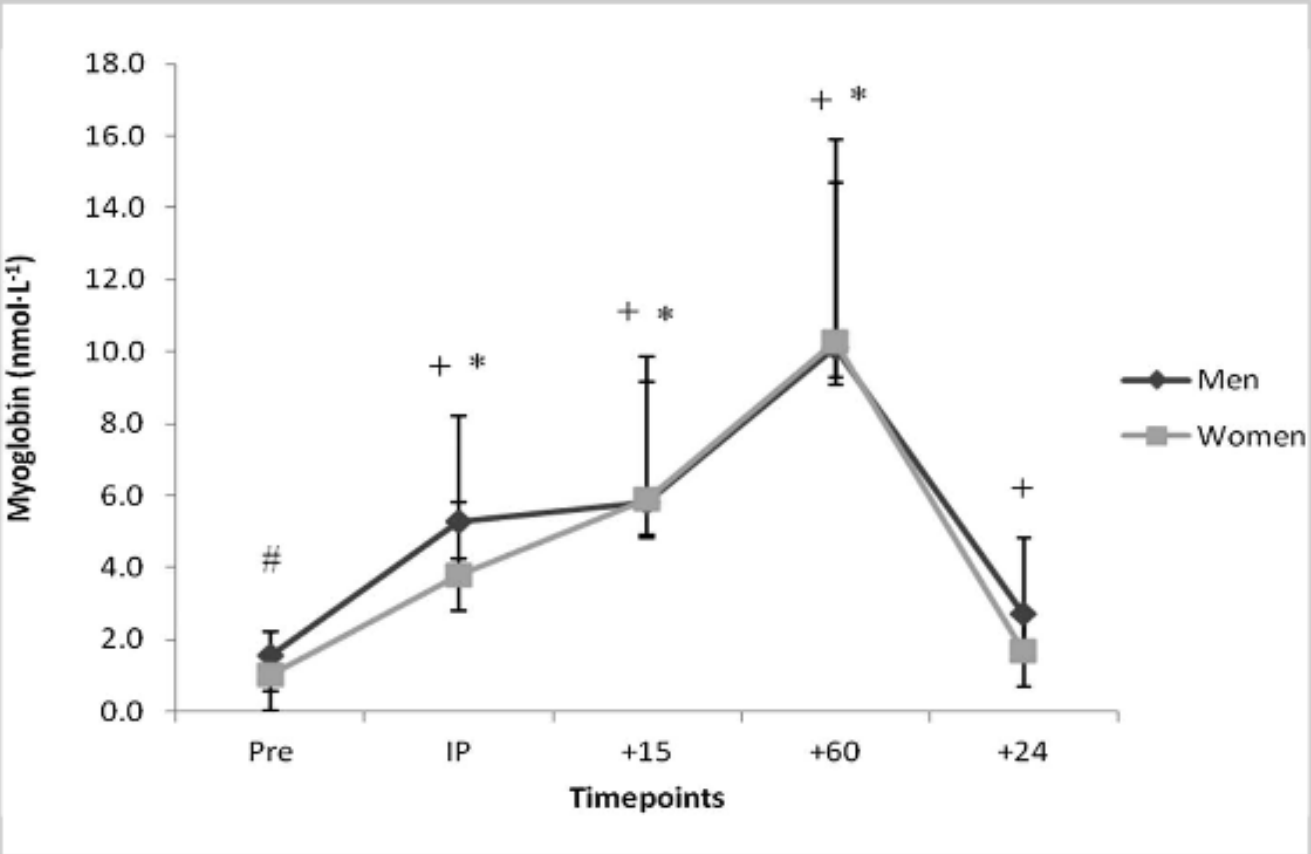


Figure 1. Myoglobin concentrations (mean) in resistance-trained men and women at pre-exercise (pre), immediately postexercise (IP), 15 minutes postexercise (+15), 60 minutes postexercise (+60), and 24 hours postexercise (+24) time points. *$p \leq 0.05$ from corresponding pre-exercise values in women; +$p \leq 0.05$ from corresponding pre-exercise values in men; #$p \leq 0.05$ from corresponding male values.

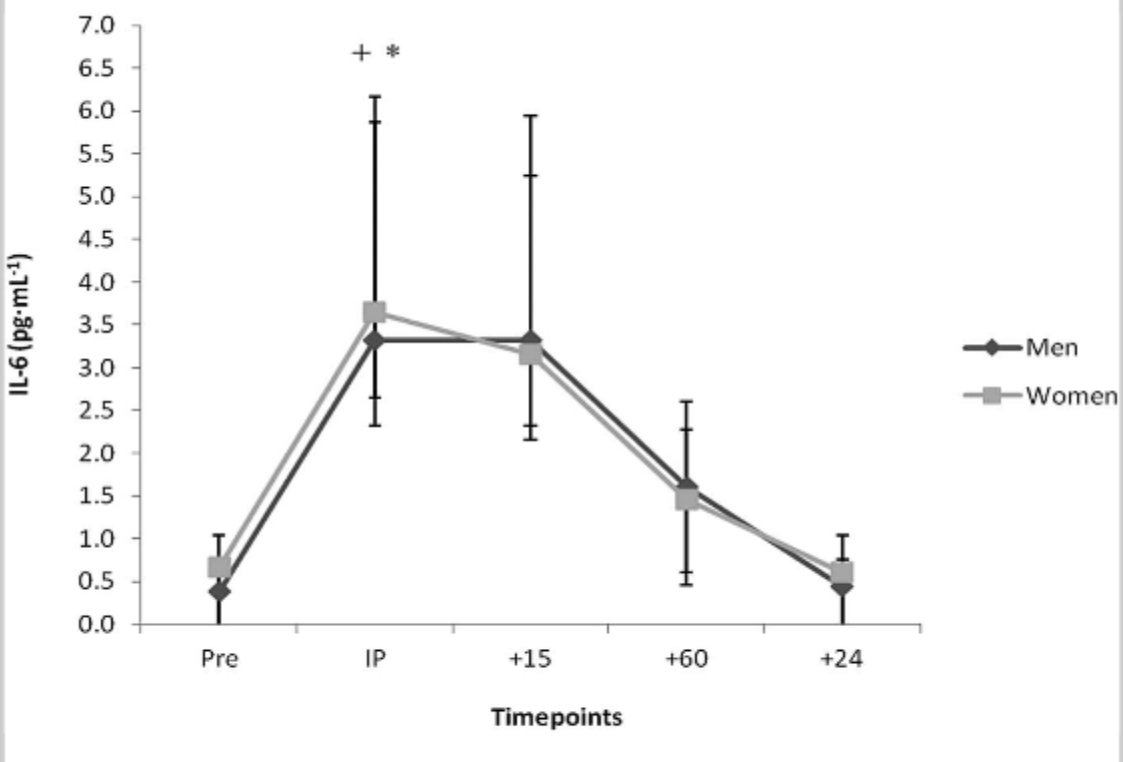


Figure 2. Interleukin-6 (IL-6) (pg·mL^{-1}) (mean ± *SD*) in resistance-trained men and women at pre-exercise (pre), immediately postexercise (IP), 15 minutes postexercise (+15), 60 minutes postexercise (+60), and 24 hours postexercise (+24) time points. *$p \leq 0.05$ from corresponding pre-exercise values.

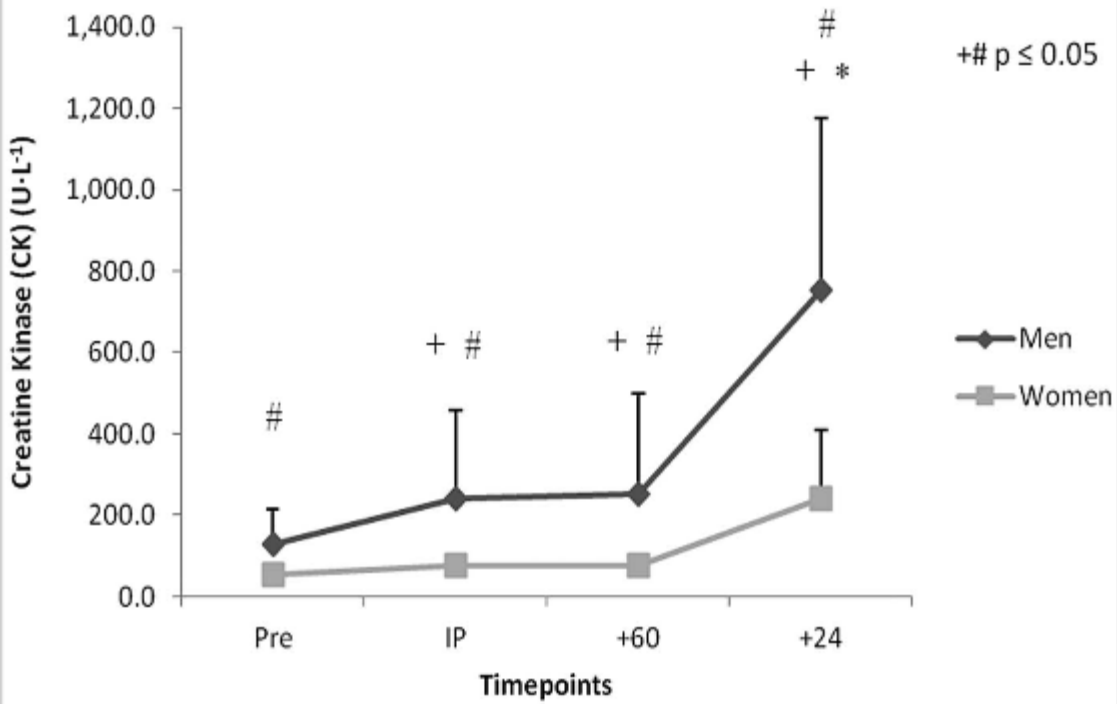


Figure 3. Creatine kinase (CK) concentrations in resistance-trained men and women (mean ± *SD*) at pre-exercise (pre), immediately postexercise (IP), 60 minutes postexercise (+60), and 24 hours postexercise (+24) time points. *$p \leq 0.05$ from corresponding pre-exercise values in women. +$p \leq 0.05$ from corresponding pre-exercise values in men; #$p \leq 0.05$ from corresponding male values.

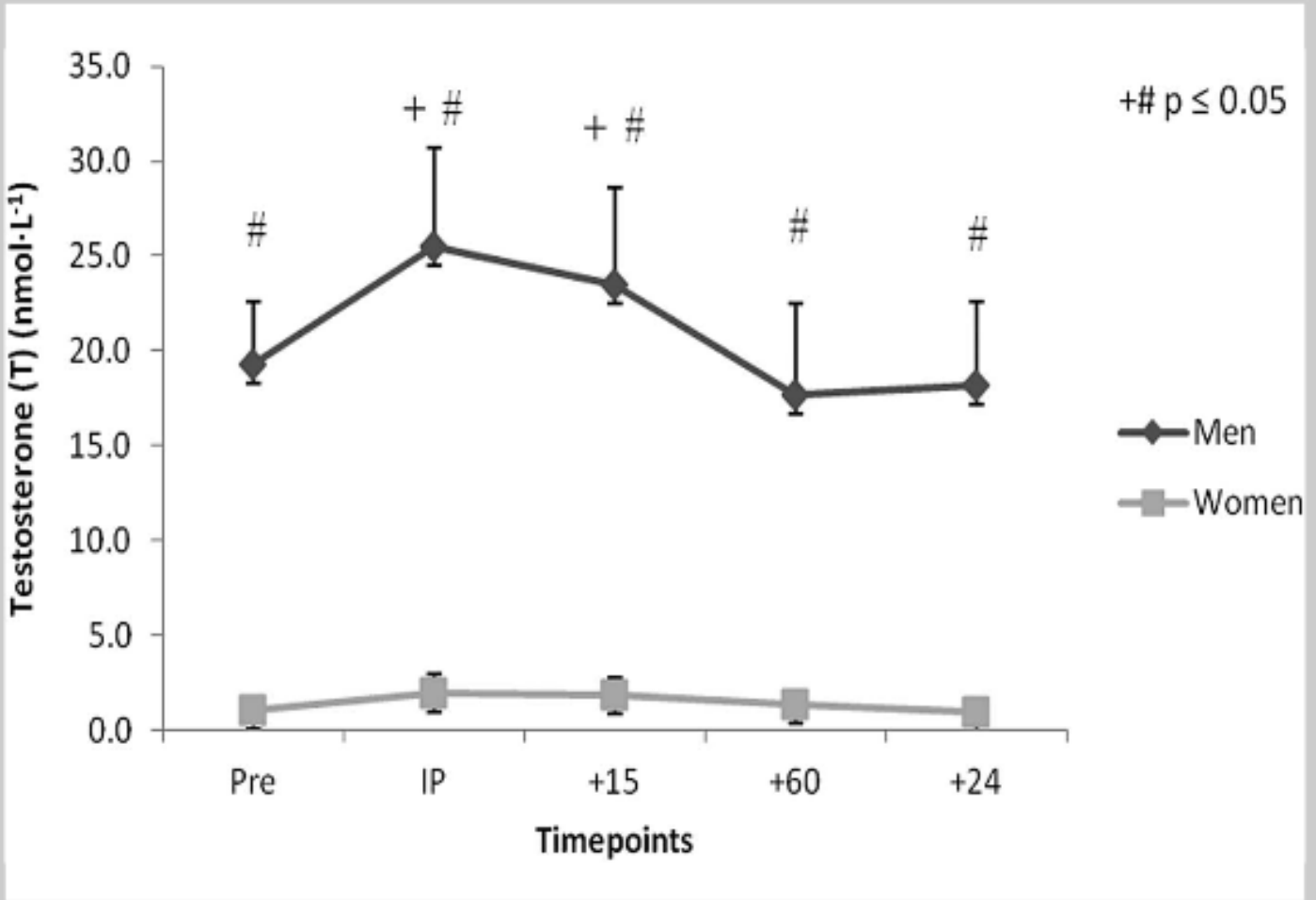


Figure 4. Serum testosterone (T) concentrations (mean ± *SD*) in resistance-trained men and women at pre-exercise (pre), immediately postexercise (IP), 15 minutes postexercise (+15), 60 minutes postexercise (+60), and 24 hours postexercise (+24) time points. *$p \leq 0.05$ from corresponding pre-exercise values in women; +$p \leq 0.05$ from corresponding pre-exercise values in men; #$p \leq 0.05$ from corresponding male values.

SONUÇ

Kadınlar 34:0469:40 minutes, Erkekler 39:22614:43 minutes
Kadınlar %52 1RM , Erkekler %63

CK (ES, +60 ve +24saat) ve Testesteron değerlerinde (ES, +15, +60 ve +24saat) cinsiyet etkisi

Erkekler daha fazla yük ! Kadınlar daha fazla kardiovasküler stress (Myoglobin ve CK cevaplarının farklı olması)

Kadınlar , akut hasara karşı daha çabuk inflamatuar cevaplar geliştirirken, erkekler kas hasarına daha uzun süreli cevaplar oluşturmaktadır.

Yeterli toparlanma ve dinlenme (Antrenman programlarında) !...

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ORIGINAL ARTICLE

Menstrual phase and the vascular response to acute resistance exercise

Jacqueline A. Augustine[1] · Kayla N. Nunemacher[1] · Kevin S. Heffernan[1]

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GİRİŞ

Aerobik egzersizin damar fonksiyonlarına olum etkileri mevcuttur. Bu etkiler merkezi (geniş elastik arter) ve periferal (daha küçük kas arteri) damar sertliği olarak sınıflandırılabilir

Kuvvet antrenmanlarının damar sertliğine etkileri daha karışık, Akut KA merkezi arter sertliğini artırırken periferal sertliği düşürmektedir.

Çalışmalar erkekler üzerinde, Kadınlar ????

AMAÇ

Kadınlarda KA, merkezi ve periferal damar sertliğine etkileri

Adet döngüsü içerisinde meydana gelen Östrojen seviye değişimlerinin (Düşük ostrojen- foleküler fazın erken aşamaları) (Yüksek ostrojen –luteal fazın erken aşamaları) kuvvet antrenman cevaplarına etkileri

Table 1 Descriptive characteristics

Variable	Means ± SD
Age (years)	28 ± 7
Body mass index (kg/m^2)	22.6 ± 2.9
Body fat (%)	23.5 ± 2.0
Bench 5-repetition maximum (kg)	27 ± 16
Biceps 10-repetition maximum (kg)	14 ± 7
Waist circumference (cm)	75 ± 2
Sitting time (h)	7 ± 4
Metabolic equivalents (minutes/week)	3760 ± 2005
Age of menarche (years)	12.0 ± 0.4
Gynecological age (years)	15.5 ± 2.0
17B-estradiol early follicular phase (pg/ml)	1.78 ± 0.51
17B-estradiol early luteal phase (pg/ml)	2.40 ± 0.26[a]

SD standard deviation

[a]Significantly different from early follicular phase, $p < 0.05$

21 Aktif kadın !..

METOT

ALIŞTIRMA
SAĞLIK ÖYKÜSÜ
1RM TEST
MENSTRAL D.T.

1

FOLEKÜLER FAZ (İLK1-7 GÜN)
DAMAR TESTLERİ
ÜST VÜCUT K.A.

2

LUTEAL FAZ(İLK 14-19 GÜN)
DAMAR TESTLERİ
ÜST VÜCUT K.A.

3

METOT

ALIŞTIRMA
SAĞLIK ÖYKÜSÜ
1RM TEST
MENSTRAL D.T.

1

FOLEKÜLER FAZ (İLK1-7 GÜN)
DAMAR TESTLERİ
ÜST VÜCUT K.A.

2

LUTEAL FAZ(İLK 14-19 GÜN)
DAMAR TESTLERİ
ÜST VÜCUT K.A.

3

ANTRENMAN ÖNCESİ, ANTRENMAN HEMEN SONRASI (~2dk), +10, +20, + 30

METOT

ALIŞTIRMA
SAĞLIK ÖYKÜSÜ
RM TEST
MENSTRAL D.T.

1

FOLEKÜLER FAZ (İLK1-7 GÜN)
DAMAR TESTLERİ
ÜST VÜCUT K.A.

2

LUTEAL FAZ(İLK 14-19 GÜN)
DAMAR TESTLERİ
ÜST VÜCUT K.A.

3

5 SET * 5 TEKRAR BENCH PRESS RM
5 SET * 10 TEKRAR BİCEPS CURL RM

SETLER ARASI 90 sn dinlenme 1..

Table 2 Blood pressure following acute RE

Variables	Menstrual phase	Baseline	Post-1	10 min	20 min	30 min	Time effect	Phase effect	Interaction
SBP (mmHg)	Follicular	115 ± 2	126 ± 5[a]	120 ± 4[a]	119 ± 3[a]	120 ± 4[a]	0.02	0.94	0.30
	Luteal	113 ± 2	123 ± 3[a]	116 ± 2[a]	117 ± 2[a]	118 ± 2[a]			
DBP (mmHg)	Follicular	69 ± 2	66 ± 1	64 ± 2[a]	64 ± 3[a]	66 ± 2	0.01	0.06	0.83
	Luteal	67 ± 2	64 ± 1	63 ± 2[a]	62 ± 1[a]	64 ± 2			
MAP (mmHg)	Follicular	78 ± 2	87 ± 2[a]	82 ± 2	82 ± 2	83 ± 2	0.01	0.45	0.70
	Luteal	82 ± 1	83 ± 2	80 ± 2	80 ± 1	81 ± 2			
PP (mmHg)	Follicular	49 ± 2	60 ± 4[a]	56 ± 3[a]	55 ± 2[a]	54 ± 3[a]	0.01	0.61	0.69
	Luteal	45 ± 2	59 ± 3[a]	54 ± 2[a]	55 ± 2[a]	54 ± 3[a]			
aSBP (mmHg)	Follicular	102 ± 3	108 ± 4[a]	101 ± 4[a]	101 ± 3	100 ± 3	0.00	0.40	0.72
	Luteal	98 ± 2	105 ± 2[a]	99 ± 2	99 ± 2[a]	101 ± 2[a]			
aDBP (mmHg)	Follicular	69 ± 2	69 ± 3	67 ± 2	66 ± 2[a]	66 ± 2	0.03	0.07	0.77
	Luteal	69 ± 2	66 ± 4[a]	64 ± 4[a]	64 ± 1[a]	66 ± 2			
aMAP (mmHg)	Follicular	84 ± 2	87 ± 3[a]	83 ± 2	82 ± 2	83 ± 2	0.00	0.17	0.83
	Luteal	83 ± 5	84 ± 3	80 ± 2[a]	81 ± 2[a]	82 ± 3[a]			
aPP (mmHg)	Follicular	33 ± 2	39 ± 4[a]	34 ± 3[a]	35 ± 2[a]	32 ± 2[a]	0.00	0.79	0.91
	Luteal	29 ± 1	40 ± 2[a]	35 ± 1[a]	35 ± 2[a]	36 ± 1[a]			
HR (bpm)	Follicular	58 ± 3	62 ± 3[a]	62 ± 3[a]	62 ± 3[a]	60 ± 3[a]	0.02	0.08	0.88
	Luteal	60 ± 3	63 ± 3[a]	64 ± 3[a]	63 ± 3[a]	61 ± 2[a]			

[a]Significantly different than baseline, $p < 0.05$; Mean ± Standard Error;

Post-1 immediately post-RE, *SBP* systolic blood pressure, *DBP* diastolic blood pressure, *MAP* mean arterial pressure, *PP* pulse pressure, *aSBP* aortic systolic blood pressure, *aDBP* aortic diastolic blood pressure, *aMAP* aortic mean arterial pressure, *aPP* aortic pulse pressure

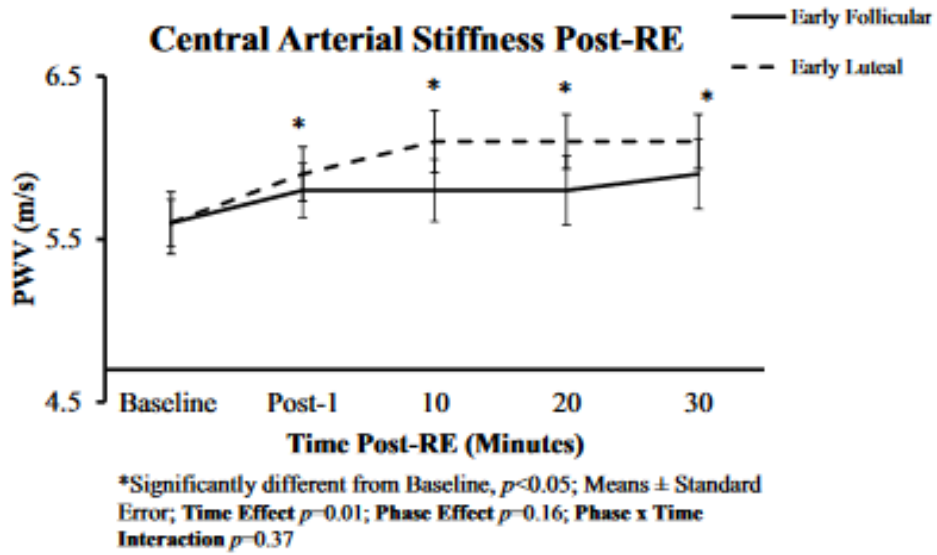

Fig. 1 Central arterial stiffness post-RE. Pulse-wave velocity (PWV) measured at baseline and up to 30 min following RE during both early follicular and luteal phase

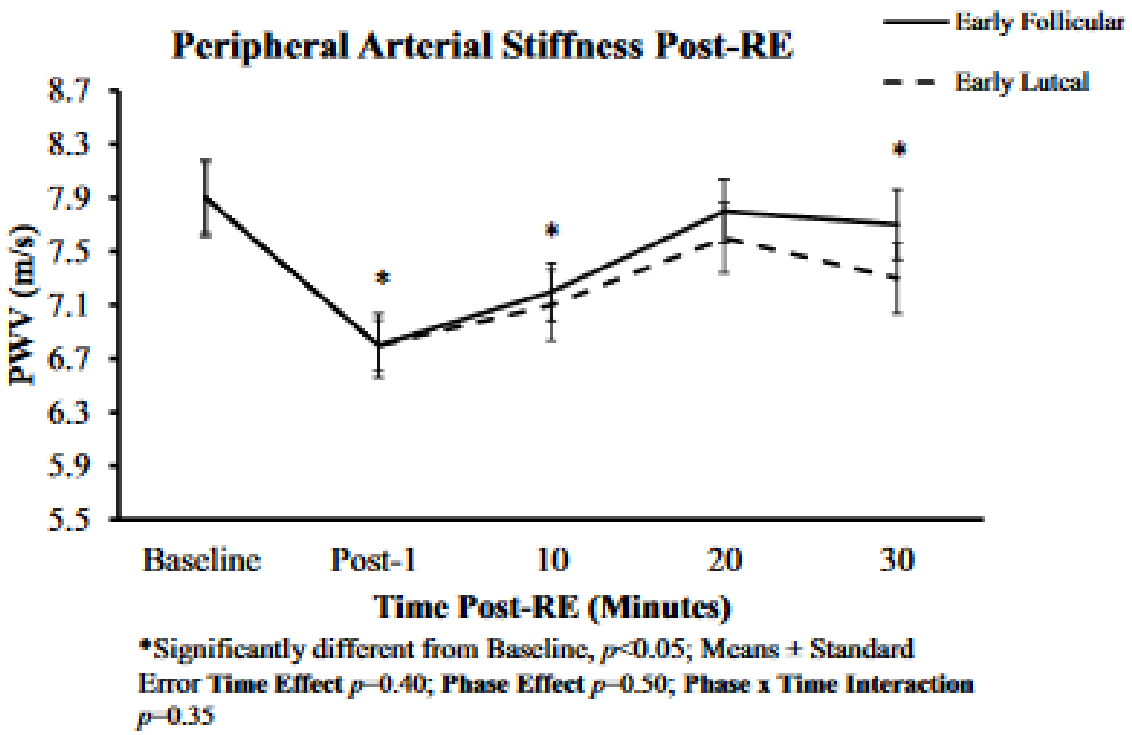

Fig. 2 Peripheral arterial stiffness post-RE. Pulse-wave velocity (PWV) measured at baseline and up to 30 min following RE during both early follicular and luteal phase

SONUÇ

KA merkezi damar sertliğini artırırken, periferal damar sertliğini düşürmektedir.

Estradiyol konsantrasyonları, erken luteal fazda, foleküler faza oranla yüksek olmasına rağmen, Menstral döngü, (premonopoz genç kadınlarda) KA akut cevaben oluşan, damar sertliğini etkilememektedir.

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Experimental Gerontology

journal homepage: www.elsevier.com/locate/expgero

Dose-and gender-specific effects of resistance training on circulating levels of brain derived neurotrophic factor (BDNF) in community-dwelling older adults

Louis Nuvagah Forti [a,b], Evelien Van Roie [c], Rose Njemini [a,b], Walter Coudyzer [d], Ingo Beyer [a,b,e], Christophe Delecluse [c], Ivan Bautmans [a,b,e,*]

GİRİŞ

BDNF, Nöroplastisiteyi artırır ve düşük konsantrasyonları özellikle yaşlı popülasyonlarda nöral kayıplar ile sonuçlanır.

Egzersizin BDNF salınımını tetiklediği düşünülmektedir. Ancak KA, BDNF konsantrasyonlarına etkileri ile ilgili çelişkili bulgular mevcutturr

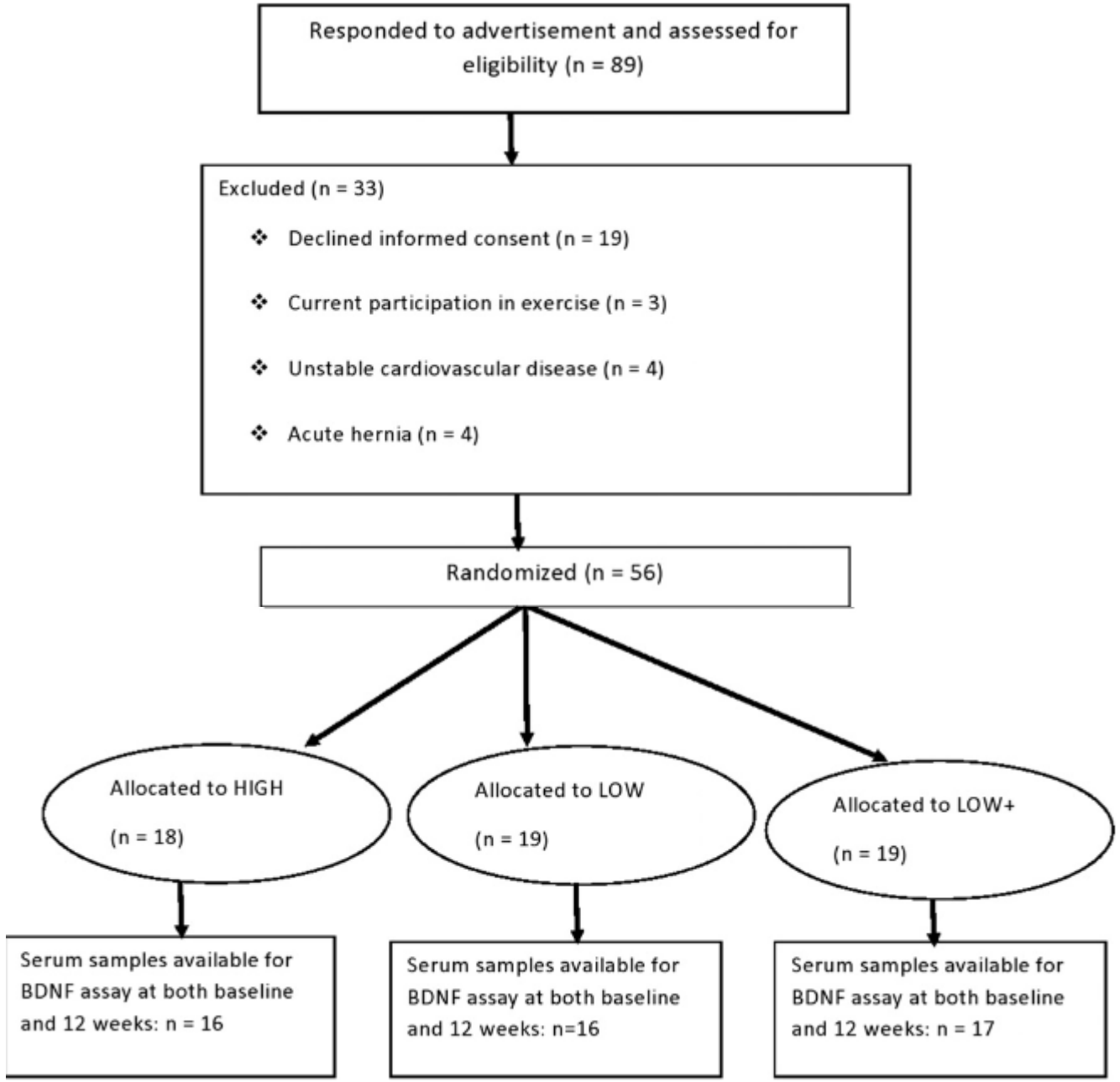
Responded to advertisement and assessed for eligibility (n = 89)
Excluded (n = 33)
Declined informed consent (n = 19)
Current participation in exercise (n = 3)
Unstable cardiovascular disease (n = 4)
Acute hernia (n = 4)
Randomized (n = 56)
Allocated to HIGH (n = 18)
Allocated to LOW (n = 19)
Allocated to LOW+ (n = 19)
Serum samples available for BDNF assay at both baseline and 12 weeks: n = 16
Serum samples available for BDNF assay at both baseline and 12 weeks: n=16
Serum samples available for BDNF assay at both baseline and 12 weeks: n = 17

Table 1
Overview of participant characteristics at baseline stratified accordingly to gender.

Variable	Male				Female			
	HIGH (n = 8)	LOW (n = 7)	LOW+ (n = 9)	p^a	HIGH (n = 8)	LOW (n = 9)	LOW+ (n = 8)	p^a
Age (years)	67.45 ± 5.80	69.88 ± 3.99	68.05 ± 6.49	0.69	67.93 ± 2.88	68.05 ± 6.31	67.17 ± 5.87	0.92
Weight (kg)	79.69 ± 10.40	86.77 ± 12.92	86.64 ± 8.52	0.33	65.10 ± 7.31	66.83 ± 11.38	68.17 ± 6.27	0.74
Height (m)	1.74 ± 0.05	1.73 ± 0.06	1.73 ± 0.05	0.96	1.62 ± 0.06	1.58 ± 0.07	1.61 ± 0.05	0.36
BMI (kg/m^2)	26.38 ± 2.87	28.94 ± 3.19	28.96 ± 3.27	0.19	24.87 ± 2.74	26.90 ± 4.97	26.48 ± 2.50	0.43
Type-2 diabetes (n)	0	2	1	0.26	1	0	0	0.64
BDNF (ng/mL)	35.05 ± 13.67	35.48 ± 11.94	34.86 ± 10.74	0.99	37.60 ± 13.78	36.76 ± 13.32	39.54 ± 9.97	0.89

Except for gender, data are mean ± SD; High = High resistance training; LOW + = Mixed low-resistance training; LOW = Low resistance training; BDNF = Brain-derived neurotrophic factor; BMI = Body mass index.

METOT

KUVVET ANTRENMANI

12 HAFTA * HAFTADA 3 GÜN Leg P., Leg Eks., Seated Row 2 dakika dinlenme

YÜKSEK KUVVET GRUBU; 1RM%80 2 Set*10-15 Tekrar ---1 dakika dinlenme

DÜŞÜK KUVVET GRUBU; 1RM'%20 1 Set *80-100 Tekrar

DÜŞÜK+ GRUBU; 1RM'%20 60Tekrar Hemen ardından→ 1RM%40 + 10-20 Tekrar

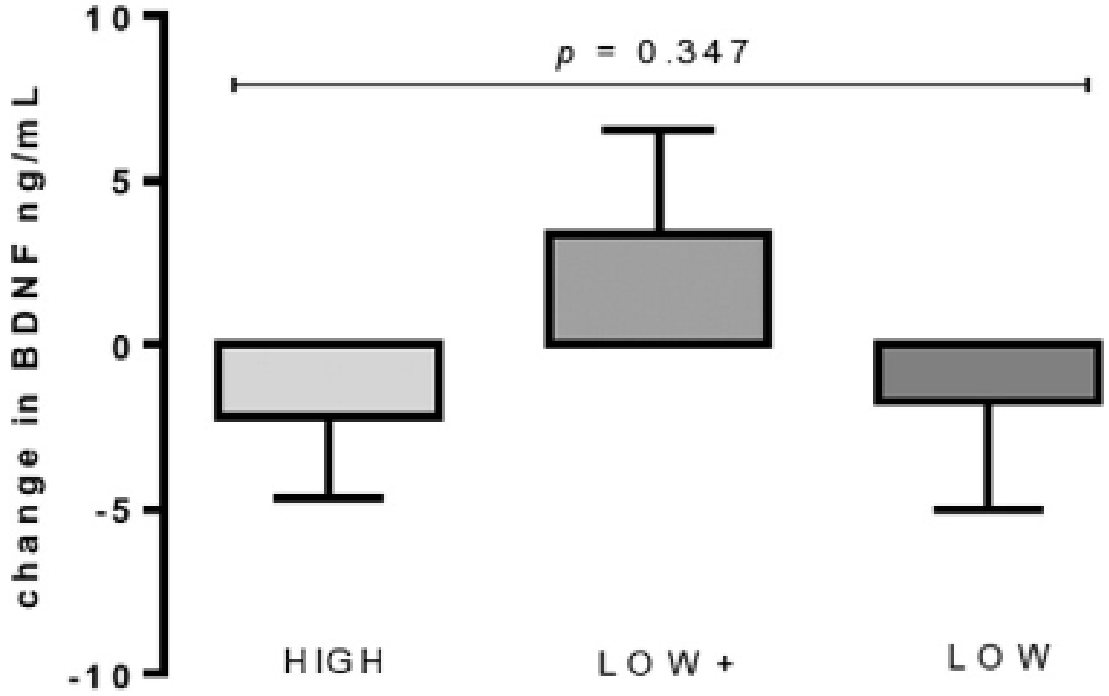

Fig. 2. Change in BDNF Concentrations between baseline and after 12 weeks exercise of the different intervention groups (HIGH, LOW, and LOW+). There was no significant change in BDNF in none of the groups at 12 weeks compared to baseline ($p = 0.347$).

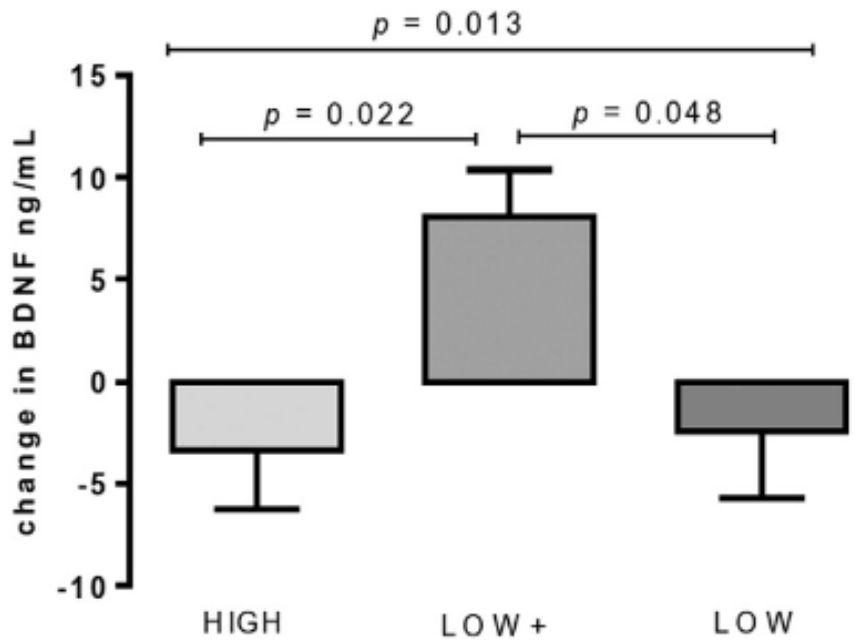

Fig. 3. Change in BDNF Concentrations between baseline and after 12 weeks exercise of the different intervention groups (HIGH, LOW, and LOW+) in males. There was a time X group interaction ($p = 0.013$). A significant change (increase) in BDNF levels was observed in the LOW+, but not in the LOW and HIGH groups in males. Bonferroni post hoc analysis showed a significant difference in change over time for LOW+ with HIGH ($p = 0.022$), and with LOW ($p = 0.048$), but not between LOW and HIGH ($p = 1.00$).

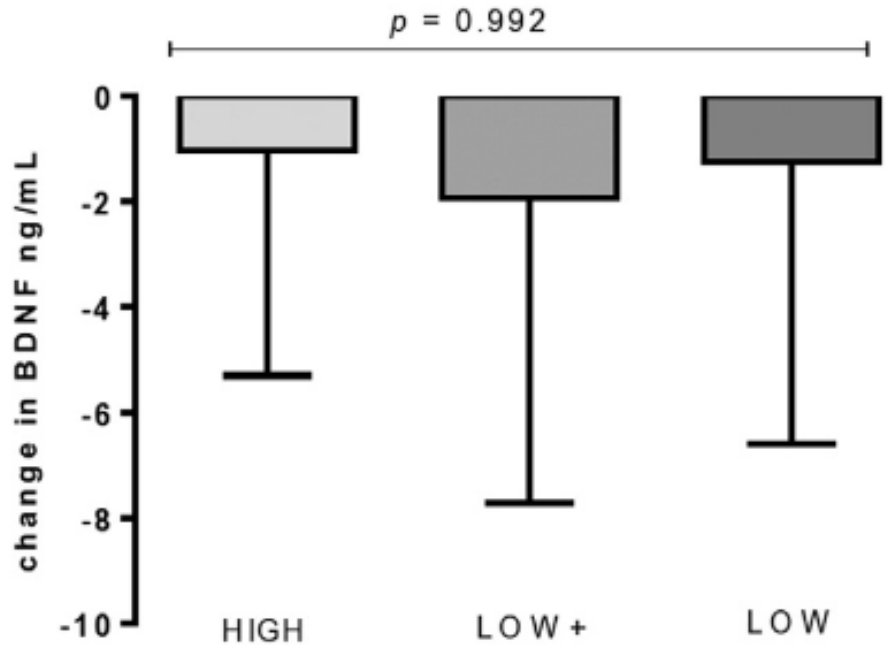

Fig. 4. Changes in BDNF Concentrations between baseline and after 12 weeks exercise of the different intervention groups (HIGH, LOW, and LOW+) in females. There was no significant change in BDNF in all groups at 12 weeks compared to baseline ($p = 0.992$).

TEŞEKKÜRLER...