In the name of God

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- **Address:** Fachulty of Physical Education and Sport Science- Pradis University of Mazandaran- University bo- Abo Ali Sina sq- Shahid Zolfaghari bo- Babulsar
- **Tel:** (0112) 5342231
- **Fax:** (0112) 5342202
- **Wesite:** http://jsport.pec.umz.ac.ir
- **Email:** j_sport@umz.ac.ir

Content

An Examination of Selected Physiological Parameters andTime Spentat VO2max and Rating of Perceived Exertionduring Continuous and Intermittent Exerciseswith High IntensityamongEndurance Runners

Asghary.H(Msc), damirchi.A(Ph.D), mohebbi.H(Ph.D)

Abstract:
The purpose of this study was to examine the physiological parameters, rating of perceived exertion (RPE) and time spent at VO2max (TVO2max) during continuous exercise and intermittent exercises with high intensity. Eight male endurance runner students aged 25.5±2.92 years, height 174.62±4.98 cm, weight 69.5±7.34 kg and VO2max 47.38±3.22 ml /kg/min took part randomly in continuous exercise and 3 interval exercises with exercise to rest ratio 30 second to 15 second (IT1), 60 second to 30 second (IT2) and 120 second to 60 second (IT3). Respiratory exchange ratio (RER), oxygen uptake (VO2), heart rate (HR) and rating of perceive exertion were measured throughout exercises. One way analysis variance (ANOVA) and Tukey post hoc test used for determination of any significance difference between groups.The results showed that there were significant differences between continuous group and all intermittent groups in all variables. Also there was significant difference between HR, VO2 and TVO2max in IT1 and IT3, RER in IT3 compared with IT1 and IT2, and RPE in all groups ($P<0.05$). We conclude that intermittent exercises and special intermittent exercises with shorter exercise and rest bouts, not only can impose better physiological stress upon individual, but also attenuates athlete's rating of perceived exertion and lets him to do exercise with more time in VO2max than longer bouts and continuous exercise.

Keywords: endurance runner, respiratory exchange ratio, VO2, velocity associated with VO2max, time spends of VO2max.

A Comparison of Exercise with Different Intensity in Morning and Evening on Maximal fat Oxidation in Obese and Normal Weight Men

Azizi.M(Ph.D),Mohebbi.H(Ph.D)

Abstract:

Back ground and purpose: Some metabolic and hormonal variables that affect fat oxidation have circadian rhythms. Thus, the purpose of this study was to investigate the effect of time of day on maximal fat oxidation (MFO) and the exercise intensity at which MFO occurred (FATmax) in obese and normal weight men.

Methodology: MFO and FATmax measured in 12 normal weight and 10 obese men during incremental running exercise test with 3 min stages on treadmill by indirect calorimetry method. Student's t-test and one-way ANOVA with repeated measure was used to analyses variables.

Results: We found that fat oxidation and MFO in both groups were higher in the evening than morning, but there were no significant differences in MFO between obese and normal group. Also, fat oxidation rate in low intensity exercise (VO2max<60%) in obese and normal groups were similar, but in higher exercise intensity, in normal group were significantly higher than obese group.

Conclusion: Our results suggest that exercise in the evening with FATmax intensity is better for weight loss purposes.

Keywords: maximal fat oxidation, time of day, exercise intensity.

The Interaction Effects of Time of Day and Menstrual Cycle on Physiological and Physical Fitness Factors

Sarraf.V.s (PhD), Iraji.S.f(Msc)

Abstract:

Purpose and Background: The purpose was to investigate the interaction effects of timeof day and menstrual cycle on physiological and physical fitness factors in athletesandnon-athletes.

Methodology: Eighty students were divided into two groups: athletesand non-athletes with three subgroups including follicular, luteal and menstrual.After completing of the questionnairesand measuringbody temperature andblood pressure measurement andwarm up phase, factors were measured to distinctive order.Related tests have been performed at three times 7.00 - 9.00, 13.00 - 15.00 and 18.00 - 20.00.

Results: The data analyes using repeated measure ANOVA showa significant diurnal variation was found for balance, trunk strength, body tempreture and systolic and diastolic pressure. There was a significant difference among responses of athletes and nonathletes to the effect of time of day on physical fitness factors just for trunk strength. However, a significant mutual effect of time of day and phases of menstruation cycle was observed for trunk strength too.

Conclusion: physiological and physical fitness factors, except balance has shown significant increase at afternoon.

Keywords: daily times, menstrual cycle, physiological factors, bodyfitness.

The Effects ofEight-week Aerobic Interval Training and Massage Therapy On CPR and Cardiopulmonary Function in CABG patients

Piri.M(Ph.D), Sheikh Sarraf.B(Msc), azarbayjani.M.a(Ph.D), Aga aliinejad(Ph.D)

Abstract:
Background&Purpose;The purpose of this study was to investigate effects of8 weeks aerobic interval training and massage therapy on CRP changes and Cardiopulmonary Fitness in patients, after Coronary Artery Bypass Graft (CABG).
Methodology: The population consisted of patients who had undergone their open heart surgeries in 2011 and 30 days had past from their operation. 60 patients met the conditions for entering the experiments and were willing to cooperate. These were randomly categorized and put into three different groups; The Aerobic Interval group (AI) (n=20), the Massage Therapy group (MT), (n=20), the control group (C), (n=20). Aerobic interval training and Massage Therapy were performed eight weeks. Vo2peak was measured and blood samples were taken 48 hours before and after exercise training. Data were analyzed using mean and standard deviation for statistical description. Paired t Test and ANCOVA are also used for inferential analysis of data. Statistical significance was set at $P \leqslant 0.05$.
Results:The result showed that 8 weeksregular Aerobic interval training and Massage Therapy significantlyreduces CRP level by 42% and 25% respectively ($P<0.05$). Furthermore, Vo2peak was significantlyincreased in AI (22%) and MT (17%) groups compared to C group ($P<0.05$). Regular Aerobic interval training and Massage Therapy significantly reduce CRP levels and increase Vo2peak in CABG patients.
Conclusion: These positive changes could be useful to prevent cardiac diseases and mortality after CABG. Moreover, aerobic interval training was more effective in reducing CRp and increasing Vo2peak than massage therapy.

Keywords: Aerobic Interval Training, Massage Therapy, CRP, Vo2peak, CABG.

The Effect of Methylsulfonylmethaneon Plasma Concentration of Interleukin- 6 andSome Exercise Recovery Markers after Acute Strenuous Exercise in Inactive Women

Samavatisharif.M.s(Ph.D), Farhangi.N(Ph.D)

Abstract:

Backgrounds&Purpose: Methylsulfonylmethane(MSM) is a natural, organically bound sulfur that might have anti-inflammatory effects. Strenuous exercise can lead to inflammation and cytokines products in the body. The purpose of this study was to investigate the influence of methylsulfonylmethane on some recovery markers of exercise and plasma concentration ofinterleukin-6 (IL-6) ininactive women.

Methodology: Thirty healthy women were randomly assigned to two groups that included experimental (ingest 3g/day MSM, 30 days) and control (ingest placebo) groups.Four 30-second Wingate cycling tests were performed with 20 W. The blood samples were taken before and 15 minute after test. Muscle soreness(using a 5-point Likert scale) and fatigue(using the Profile of Mood States Questionnaire) questionnaires were completed by subjects.

Results: Muscle soreness and fatigue markers and plasma concentration of IL-6 decreased after using MSM during 30 days ($p=0.050$, $p=0.053$, $p>0.001$ respectively).

Conclusion: Ingest 3g MSM can be have remarkable influence on reduction of some recovery markers and IL-6 plasma concentration following strenuous exercise in inactive women.

Keywords: muscle soreness, fatigue, Interleukin-6.

The Effect of Supplementation of Crude Magnolia and Endurance Training on Liver IL-6, Total Antioxidant Capacity, and Glycogen Concentrations in Male Rats

Ghanbari-Niaki.A (PhD), Farzanegi.P (PhD), Ghafarian,F (Msc), Fathi.R(PhD)

Abstract

Background&Purpose: Today exercise training and use of herbal supplements is important for exercise scientist. The aim of this study is to investigate the effect of supplementation of crude magnolia and endurance training on liver IL-6, (total antioxidant capacity) TAC and glycogenconcentrations in male rats.

Methodology: In this experimental study,twenty-one adult male Wistar rats (6–8 weeks old, 142.19±12.733 g)were used. Animals were divided into three groups including: control (placebo), experimental-1(placebo+training) and experimental-2 (magnolia+training). Training groups were givenexercise for 6 weeks (at 25 m/min, 0% grade,for 60 min/day, 5 days/week). Magnolia extract and saline in equal volume (2 mg per kg body weight) from the beginning of the second week for 4 weeks (5 days per week) were fed to three groups.Rats were sacrificed 72 h after the last session of exercise and 4 h fasting and liver was collected for IL-6, TAC and glycogenconcentrationsevaluation. One way ANOVA test, were performed.

Results: IL-6 concentrations significantly ($P < 0.05$) increased in experimental-1 group and decreased in experimental-2 group when compared with control group. This decrease was not significant. Liver TAC and glycogen concentrations significantly increased in experimental-2 group ($P < 0.05$) and did not decrease significantly in experimental-1group in comparison to the control group.

Conclusion: The findings of the current study indicated that the supplementation of crude magnolia and endurance training can play a protective role against oxidative and inflammatory agents through the increase of liver TAC and glycogen stores.

Keywords: IL-6, TAC, glycogen, extraction of magnolia, endurance training.

The Effect of Resistance Training (Inverted Pyramid) on Some Biomechanical Factors onSoccer Players of the Universityof Mazandaran

Shahsavar.A(Msc), Razzaghi.A(Msc), Chaleh Chaleh.M(Msc)

Abstract:

Introduction& purpose: Soccer is a sport that requires various aspects of fitness, such as physical, mental and psychological preparation &……In the course of evolution of soccer, the role and application of sport sciences and other sciences should not be ignored. The purpose of this study was to investigate the Effect of resistance training on some biomechanical factors of collegian soccer players in Payame Noor University of Mazandaran.

Methodology: Forthe current study, Twenty eight subjects (mean age of 22.5±2.68 year, mean height of 179.75±4.54 cm, mean weight of 75.42±7.48 kg and mean BMI of 23.49±2.44 kg/m2) randomly selected among soccer players of the university and divided into experimental(n=14)and control group (n=14). Experimentalgroup performed 6 weeks resistance training (Inverted pyramid) 3 sessions per week, 55-70 minutes per session and the control group did not perform any exercise program during this period. However, both experimental and control groups performed routine weekly exercise for their teams that involved 3 sessions per week for 90-100 minutes. Dribbling speed and shooting speed measured at pre-test and post-test phases. Data analyzed by using independent t-test.

Results: Results showed that resistance training had significant effects on the dribbling and shooting speed of soccer players (p=0,003).

Conclusion: Based on these results, it can be concluded that resistance training (Inverted pyramid) is an appropriate method to improve dribbling and shooting speed of soccer players.

Keywords: dribbling speed, shooting speed, inverted pyramid.

The Response of Brain-derived Neurotrophic Factor (BDNF) in Flexor HallucisLongus and Soleus Muscles of Male Wistar Rats to a Session of Resistance Exercise

Zarbaf.R(Msc), Gharakhanlou.R(Ph.D), Molly.S. J(Ph.D),
Mohammad Khani.R(Msc), Islamic.R (Msc)

Abstract:
Background&Purpose: Recently the effect of physical activity on neurotrophins, specialy brain-derived neurotrophic factor (BDNF) function and role of that in musle has been considered. In the current research, the response of BDNF to a session of resistance exercise in flexor Hallucis longus(FHL) and soleus muscles of male Wistar rats was studied.
Methodology: 24 male Wistar rats were randomly divided into two groups of sedentary and one exercise session. Animals in the exercise session were made climb a ladder with weights equal 30% of their weights. Then 24 and 48 hours after the exercise session, they were anesthetized and immediately their muscles were isolated.Also ELISA kit, independent-samples T-test and ANOVA test were used.
Results: Theresults showed that BDNFbase levelsoftheflexor Hallucis longus was significantly higher than soleus muscle. Alsothe value of this protein in FHL muscles showed a lower level of significance in two time points of 24 and 48 hours after resistence exercise, while no significant changes were seen in SOL.
Conclusion: The difference between control levels of BDNF in FHL and soleus, significant reduction of BDNF levels in FHL and no changes of this protein in soleus after the resistance exercise, are the reasons for the special effects of BDNF in any of the fast and slow twitch muscles.

Keywords: BDNF, resistance exercise, skeletal muscle.

The Effect of 8 Week Resistance Training on Plasma Omentin Concentration and Insulin Resistance Index in Overweight/Obese Women

Fathi.R(Ph.D), Nazar Ali.p(Ph.D), Adabi.Z(Msc)

Abstract:

Background and purpose: Omentin is a novel adipokine that is predominantly secreted by visceral adipose tissue. The purpose of this study was to determine the effect of resistance training on plasma concentration of omentin-1 in obese and overweight women.

Methods: Thirty overweight/obese women (BMI ≥25 kg/m2), aged 34/7±5/5years, were randomly assigned into two groups, resistance training (n=12), and control (n=8) groups. Resistance training was carried out for 8 weeks, 3 sessions per week at 60-70 percent of 1RM. Plasma levels of omentin, glucose, insulin and HOMA-IR were assessed 24 hours before and 48 hours after exercise in fasting state. Data were analyzed by using paired sample-t test.

Results: plasma omentinlevels decreased in resistance training group but it was not statistically significant. Resistance training led to significant decrease in plasma insulin levels. In addition, HOMA-IR was significant decreased in resistance training group after 8 week resistance training.

Conclusion: According to this study, resistance training help to improvement of insulin resistance but it was not associated with plasma omentin alterations.

Keywords:omentin, resistance training, insulin resistance.

The Effect of Eight-week Core Strength Training onFemale College Swimmers

Mehdizadeh.R(Ph.D), mohammadi.S(Msc)

Abstract:
PurposeBackground&: The purpose of this study was to determine the effect of eight-week core strength training on athletes'performance in college-aged swimmers.
Methodology: Twenty two girl swimmers (M age=20.85, SD=1.63 years)were selected through purposive sampling and were randomly divided into twoexperimental and control groups.Core stability tests, physical performance tests and swim performance tests were assessed before training program. Freestyle swimming performance tests consisted of 50m and 100m swimming time. Then, core strength training was done for 8 weeks (3 days / week, 60 minutes) by experimental group. Datawere analyzed by using independent and paired t-tests. The differences were considered significant at $P \leqslant 0.05$.
Results: The results showed that after training, 50m swimming time was 4.99 % lower in experimental group than in control group and 100m swimming time was 0.23 % lower in experimental group than in control group. But, these changes were not significant. After 8-week of core strength training, 50m and 100m swimming times were not changed significantly in the experimental group compared with pre-test measures.
Discussion: According to the results, core strength training had a positive effect on core stability and physical performance, but did not improve significantly swimming time in young swimmers.

Keywords: core stability, physical performance, sprint swimming, girl swimmers.

The Effects of Eight-weekHigh Intensity Circuit Resistance Training on Plasma Lipids Profile and Insulin Resistance Index in Male Patients with Type 2 Diabetes

Shaban Pour.J(Msc), saghebjoo.M(Msc), Fathi.R(Ph.D),gharari arefi.R(Msc)

Abstract:

Background&Purpose: The lipid profile and glycemic response to aerobic training is well understood; however, the response to resistance training is not. Resistance training may be more appealing and feasible than aerobic training for people with T2D who are often overweight and sedentary. Thus, the aim of the present study was to investigate the effects of eight weeks of high intensity resistance training on plasma lipids profile and insulin resistance index in male patients with T2D.

Methodology: A total of 18 sedentary, overweight men with type 2 diabetes (age: 48.5±7.73 yr, weight: 79.41±12.6 kg and BMI: 27.29±4.38 kg/m2), were randomized to the experimental (n=10) and control (n=8) groups.Experimental group performed 8 weeks of circuit resistance training (60-90 min/day, 75-80% 1-RM, 3 days/week). Plasma lipids, glucose and insulin levels and insulin resistance index (HOMA-IR) were measured 24h before and 60h after the training period.

Results: The findings showed that plasma HDL-C significantly increased (P=0.04) in experimental group, but plasma LDL-C (P=0.41), LDL/HDL (P=0.67), TG (P=0.39) and TC (P=0.47) remained unchanged. Plasma insulin (P=0.01), glucose (P=0.04) and HOMA-IR (P=0.01)were also significantly reduced.

Discussion: High intensity resistance training may have an improvement role in type 2 diabetes metabolic disorders through increasing of HDL plasma level and lowering insulin resistance.

Keywords: Circuit resistance training, Type 2 diabetes, Lipid profile, HOMA-IR.