

**PENGARUH *MODERATE INTENSITY CONTINUOUS TRAINING* (MICT)  
TERHADAP PERSEN LEMAK TUBUH PASIEN OBESITAS  
BERDASARKAN KAJIAN VARIASI GENETIK UCP2 ALA55VAL**

**ABSTRAK**

**Latar belakang :** Obesitas dinyatakan dengan adanya penumpukan lemak tubuh total sebesar 25% pada pria dan 35% atau lebih pada wanita. *Moderate Intensity Continuous Training* (MICT) terbukti dapat menurunkan kadar lemak tubuh dan meningkatkan kadar asam lemak bebas. Obesitas juga dipengaruhi oleh genetik, salah satunya yaitu gen UCP2 Ala55Val yang berkaitan dengan penurunan derajat pelepasan dan pengeluaran energi. Penelitian mengenai pengaruh variasi genetik UCP2 Ala55Val terhadap obesitas menunjukkan perbedaan hasil pada perbedaan variasi dari populasi dan jenis kelamin.

**Tujuan :** Mengetahui pengaruh *moderate intensity continuous training* (MICT) terhadap persen lemak tubuh pasien obesitas berdasarkan kajian variasi genetik UCP2 Ala55Val.

**Metode :** Penelitian menggunakan metode *Quasi Experimental* dengan *design study pre and post design* tanpa kontrol. Pengumpulan subjek menggunakan metode *non probability sampling* jenis *consecutive sampling* sejumlah 11 wanita obesitas yang mengikuti intervensi MICT 3 kali seminggu selama 8 minggu. Pengambilan data persen lemak tubuh dilakukan sebelum intervensi, minggu ke 3, 7, dan setelah intervensi serta diukur menggunakan *Bioelectrical Impedance Analysis* (BIA). Pemeriksaan variasi genetik UCP2 Ala55Val dilakukan setelah intervensi menggunakan metode *Polymerase Chain Reaction-Restriction Fragment Length Polymorphism* (PCR-RFLP). Data dianalisis dengan menggunakan uji T berpasangan.

**Hasil :** Hasil pada uji T berpasangan menunjukkan terdapat penurunan yang bermakna pada persen lemak tubuh setelah MICT ( $p=0,010$ ). Pengujian hubungan variasi genetik UCP2 Ala55Val pada perubahan persen lemak tubuh subjek yang mendapat intervensi MICT tidak dapat ditentukan dengan uji statistik karena hanya terdapat 1 subjek yang memiliki genotip T/T sehingga data yang diambil berupa nilai persen lemak tubuh tiap kelompok genotip.

**Kesimpulan :** MICT memiliki pengaruh terhadap perubahan persen lemak tubuh subjek dan hubungan variasi genetik UCP2 Ala55Val pada perubahan persen lemak tubuh subjek yang mendapat intervensi MICT tidak dapat ditentukan karena hanya terdapat 1 subjek yang memiliki genotip T/T.

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**Kata kunci:** gen UCP2 Ala55Val, *moderate intensity continuous training*, obesitas, persen lemak tubuh

# THE EFFECT OF MODERATE INTENSITY CONTINUOUS TRAINING (MICT) ON BODY FAT PERCENT OF OBESITY PATIENTS BASED ON THE STUDY OF GENETIC VARIATIONS UCP2 ALA55VAL

## ABSTRAK

**Background:** Obesity is expressed by the accumulation of total body fat by 25% in men and 35% or more in women. Moderate Intensity Continuous Training (MICT) is proven to reduce body fat levels and increase free fatty acid levels. Obesity is also influenced by genetics, one of which is the UCP2 Ala55Val gene which is associated with decreased levels of energy release and expenditure. Research on the effect of genetic variation of UCP2 Ala55Val on obesity showed different results on differences in population and gender variations.

**Objective:** To determine the effect of moderate intensity continuous training (MICT) on body fat percent of obese patients based on the study of genetic variation of UCP2 Ala55Val.

**Methods:** This research used Quasi Experimental method with pre and post study design without control. Subjects were collected using a non-probability sampling method with consecutive sampling, a total of 11 obese women who participated in the MICT intervention 3 times a week for 8 weeks. Body fat percent data was collected before the intervention, week 3, week 7, and after the intervention and measured using Bioelectrical Impedance Analysis (BIA). Examination of genetic variation of UCP2 Ala55Val was carried out after the intervention using the Polymerase Chain Reaction-Restriction Fragment Length Polymorphism (PCR-RFLP) method. Data were analyzed using paired T test and unpaired T test.

**Results:** The results of the paired T test showed that there was a significant decrease in body fat percentage after MICT ( $p=0.010$ ). Testing the relationship between genetic variation of UCP2 Ala55Val on changes in body fat percent of subjects who received MICT intervention could not be determined by statistical tests because there was only 1 subject who had the T/T genotype so that the data taken was in the form of percent body fat values for each genotype group.

**Conclusion:** MICT had an effect on changes in body fat percent of subjects and the relationship between genetic variation of UCP2 Ala55Val on changes in body fat percent of subjects who received MICT intervention could not be determined because there was only 1 subject who has the T/T genotype.

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**Keywords:** *body fat percentage, moderate intensity continuous training, obesity, UCP2 gene Ala55Val*