Model Prediksi Pengaruh Pelatihan Dasar Militer terhadap Komposisi Tubuh pada Kadet Mahasiswa Universitas Pertahanan Republik Indonesia = Body Composition Prediction Model after Basic Combat Training Among Republic of Indonesia Defense University Cadets

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Abstrak

atar Belakang: Kejadian obesitas pada remaja terus meningkat di Indonesia. Kadet mahasiswa Universitas Pertahanan Republik Indonesia (Unhan RI) adalah remaja yang perlu diperhatikan status gizinya karena merupakan komponen cadangan dalam pertahanan negara yang siap dimobilisasi kapan saja. Salah satu penentuan status gizi adalah berdasarkan pemeriksaan antropometri, termasuk komposisi tubuh. Penelitian di luar negeri menunjukan bahwa pelatihan dasar militer memengaruhi komposisi tubuh yang berkaitan dengan performa fisik tentara. Tujuan: Penelitian ini bertujuan untuk mengetahui pengaruh 12 minggu pelatihan dasar militer terhadap antropometri, serta untuk mengetahui model prediksi total dan delta persentase lemak tubuh (PLT) pada kadet mahasiswa Unhan RI. Metode: Studi ini adalah studi kuantitatif dengan metode Pre-Experimental One-Group Pretest-Posttest Design pada 111 wanita and 146 pria mahasiswa Unhan RI yang mengikuti pelatihan dasar militer yang memenuhi kriteria inklusi dan eksklusi. Penelitian dilaksanakan pada bulan Mei-September 2023. Variabel bebas dalam studi ini adalah Skinfold Thickness (ST), skor Z Indeks Massa Tubuh (IMT) terhadap umur, lingkar pinggang, kualitas tidur, kebiasaan makan, aktivitas fisik, dan PLT prapelatihan, dengan variabel terikat delta dan total persentase lemak tubuh pascapelatihan dasar militer. Perbedaan variabel bebas sebelum dan setelah pelatihan diuji dengan Dependent T-Test. Uji korelasi Pearson dilakukan dan dilanjutkan dengan uji multivariat regresi linier berganda untuk memeroleh model prediksi delta PLT dan total PLT pascapelatihan dasar militer. Hasil: Pelatihan dasar militer secara signifikan berpengaruh menurunkan lingkar pinggang, skinfold thickness, skinfold trisep, skinfold bisep, skinfold suprailiaka, skinfold subscapular ke arah ideal, tetapi secara signifikan meningkatkan berat badan dan status gizi berdasarkan skor Z IMT kadet mahasiswa pria Unhan RI ke arah tidak ideal. Pelatihan dasar militer tidak berpengaruh terhadap kualitas tidur, kadar lemak subkutan, PLT, massa otot skeletal kadet mahasiswa Unhan RI pria di Indonesia. Pelatihan dasar militer pada kadet wanita Unhan RI secara signifikan berpengaruh menurunkan PLT, lingkar pinggang, skinfold thickness, skinfold trisep, skinfold bisep, skinfold suprailiaka, skinfold subscapular ke arah ideal, meningkatkan massa otot skeletal ke arah ideal, tetapi meningkatkan berat badan dan status gizi berdasarkan skor Z IMT ke arah tidak ideal. Pelatihan dasar militer tidak berpengaruh terhadap kualitas tidur dan kadar lemak subkutan kadet mahasiswa Unhan RI wanita di Indonesia. Model prediksi delta persentase lemak tubuh pascapelatihan dasar militer di Indonesia pada kadet mahasiswa Unhan RI wanita adalah “Delta PLT= 4.829-0.103*ST-0.537*Z IMT” dengan kemampuan variabel menjelaskan PLT sebesar 53.8%, sedangkan pada pria adalah “Delta PLT= 5.313-0.106* ST-0.497*Z IMT-8.051E-5*Aktivitas Fisik” dengan kemampuan variabel menjelaskan PLT sebesar 56.5%. Model prediksi total persentase lemak tubuh pascapelatihan dasar militer di Indonesia pada kadet mahasiswa Unhan RI wanita adalah “PLT Total Pascapelatihan = 12.034 + 0.535*PLT prapelatihan” dengan kemampuan variabel menjelaskan PLT sebesar 76.8%, sedangkan pada pria adalah “PLT= 6.368 - 0.072*ST + 0.7*PLT prapelatihan + 0.004*karbohidrat -

7.951E-5*Aktivitas Fisik” dengan kemampuan variabel menjelaskan PLT sebesar 81.3%. Kesimpulan: Komposisi tubuh kadet mahasiswa S1 pria dan wanita Unhan RI membaik setelah pelatihan dasar militer. Prediktor paling kuat terhadap kadar PLT total dan delta PLT pada pria adalah lingkar pinggang dan PLT prapelatihan, sedangkan pada wanita prediktor paling kuat terhadap kadar PLT total dan delta PLT adalah skor Z IMT terhadap umur dan PLT prapelatihan.
.....Background: The incidence of obesity in adolescents continues to increase in Indonesia. The nutritional status of Republic of Indonesia Defense University (RIDU) cadets is important to be monitored because they are reserve components in national defense that ready for mobilization anytime. Anthropometric examination is one of nutritional assessment, including body composition analysis. Research abroad showed that basic combat training altered body composition related to army physical performance. Objective: This study aims to assess the effect of 12-weeks Basic Combat Training (BCT) on the anthropometry and to determine the total and delta body fat percentage (BFP) prediction model of RIDU cadets after basic combat training in Indonesia. Method: This study is a quantitative study using the Pre-Experimental Model One-Group Pretest-Posttest Design method with 111 female and 146 male students from the RIDU who participated in basic combat training that fullfilled the inclusion and exclusion criteria. The study was conducted in May-September 2023. The independent variables in this study were Skinfold Thickness (ST), Body Mass Index (BMI) for age, Waist Circumference (WC), sleep quality, eating habits, physical activity, and BFP before training, with dependent variable were the delta and total body fat percentage after basic combat training. Differences in independent variables before and after training were analysed by using Dependent T-Test. The Pearson correlation test was carried out and followed by a multivariate multiple linear regression test to obtain delta and total body fat percentage predictive model formula after basic combat training. Results: Basic combat training significantly reduces waist circumference, skinfold thickness, triceps skinfold, biceps skinfold, suprailiac skinfold, subscapular skinfold toward ideal values but significantly increases body weight and nutritional status based on BMI Z-scores toward less ideal levels for male Unhan RI cadets. BCT has no effect on sleep quality, subcutaneous fat levels, BFP, skeletal muscle mass of male RIDU cadets. In female, BCT significantly reduces body fat percentage (BFP), waist circumference, skinfold thickness, triceps skinfold, biceps skinfold, suprailiac skinfold, subscapular skinfold towards ideal values, and increases skeletal muscle mass towards ideal levels. However, it also increases body weight and nutritional status based on BMI Z-scores toward less ideal levels. BCT has no effect on sleep quality and subcutaneous fat levels of female RIDU cadets. The delta predictive model formula for body fat percentage after basic combat training in Indonesia for female RIDU cadet was "Delta BFP = 4.829-0.103*ST-0.537*BMI age" with the variables ability to explain BFP was 53.8%, while in men the predictive model formula was "Delta BFP= 5.313-0.106*ST-0.497*BMI age-8.051E-5*Physical activity" with the ability of the variables to explain BFP was of 56.5%. Predictive model formula of total body fat percentage after basic military training in Indonesia in female cadet was “total BFP after BCT = 12.034 + 0.535*BFP before BCT” with variable's ability to explain BFP was 76.8%, while for male the total predictive model formula was “total BFP after BCT = 6.368 - 0.072*ST + 0.7* BFP before BCT + 0.004*Carbohydrate - 7.951E-5*Physical Activity” with variable’s ability to explain BFP was 81.3%. Conclusion: Body composition among female and male RIDU cadets were improved after basic combat training. The strongest predictor of total BFP and delta BFP level in male were waist circumference and BFP before training, while in female the strongest predictor of total BFP and delta BFP level were Z-score BMI for age and BFP before training.