ABSTRACT

Muscle mass is an indicator of body condition that is influenced by various factors such as age, food consumption and daily activity level. Kempo is one of martial arts sports that has a variety of techniques, to maximize these techniques required a good muscle mass to support their appearance while playing. Variables that affect muscle mass include athlete characteristics (age, physical exercise and allowance), eating behavior (diet, caffeine consumption and soft drinks, consumption of fast food and supplements), nutritional knowledge, consumption pattern (frequency and amount of food), intake nutrients, nutritional adequacy, energy balance, physical activity and energy expenditures. This study aims to analyze the relationship between athlete characteristics and consumption patterns with muscle mass in kempo athletes in Surabaya (Case Study at UNAIR Dojo, UBAYA and UNTAG).

This research was an observational analytic research with case control study design. the sample size in this research was 72 respondents taken randomly using simple random sampling method. Data collection included weight weighing, height measurement and muscle mass measurement, 2x24 hour food recall, food frequency questionnaire, interviews consisting of athlete characteristics, nutritional knowledge and physical activity, muscle mass measurements with Bioelectrical Impedance Analysis (BIA) tools. The data were analyzed descriptively, test the relationship using chi-square test and fisher exact test.

The results showed that there was a relationship between exercise duration ($p = 0,000$) OR = 35 ($8,391 < OR < 145,985$), exercise frequency ($p = 0.013$) OR = 5 ($1,096 < OR < 22,820$), physical activity ($p = 0.036$) OR ($p = 0,000$) OR = 21 ($6,125 < OR < 72,003$) with muscle mass while between allowance to eat ($p = 1,000$), diet ($p = 0.679$), consumption caffeine and soft drinks ($p = 0,510$), consumption of fast food ($p = 0.218$), consumption of supplements ($p = 0.297$), nutritional knowledge ($p = 0.150$), carbohydrate adequacy ($p = 0.470$), fat adequacy ($p = 0.077$) and the energy balance ($p = 0.149$) has no relationship with muscle mass. The factors that most influence muscle mass in a sequence were the duration of exercise, protein adequacy and last physical activity.

The conclusion of this study are the duration of exercise, protein adequacy and physical activity can affect muscle mass in athletes kempo. Kempo athletes should better maintain and monitor the value of muscle mass in the normal range and routine examination and increase the nutritional intake as needed.

Keywords: muscle mass, exercise kempo, athlete

ABSTRAK

Massa otot adalah indikator kondisi tubuh yang dipengaruhi berbagai faktor yaitu usia, makanan dan tingkat aktivitas sehari-hari. Olahraga kempo adalah cabang beladiri yang memiliki beragam teknik, untuk memaksimalkannya diperlukan massa otot yang baik sehingga mendukung penampilan saat bertanding. Variabel yang mempengaruhi massa otot antara lain karakteristik atlet (umur, latihan fisik dan uang saku), perilaku makan (diet, *konsumsi kafein* dan *soft drink,* konsumsi *fast food* san suplemen), pengetahuan gizi, pila konsumsi (frekuensi dan jumlah makanan), asupan zat gizi, tingkat kecukupan gizi, keseimbangan energi, aktivitas fisik dan energi ekspenditur. Penelitian ini bertujuan untuk menganalisis hubungan antara karakteristik atlet dan pola konsumsi dengan massa otot pada atlet kempo di wilayah Surabaya (Studi Kasus di Dojo UNAIR,UBAYA dan UNTAG).

Penelitian ini merupakan penelitian observasional analitik dengan desain penelitian *case control study*. Sampel penelitian sebanyak 72 orang, diambil secara acak menggunakan metode *simple random sampling*. Pengumpulan data meliputi penimbangan berat badan, pengukuran tinggi badan dan pengukuran massa otot, *food recall* 2x24 jam, *food frequency questionnaire*, wawancara yang terdiri dari karakteristik atlet, pengetahuan gizi dan aktivitas fisik, pengukuran massa otot dengan alat *Bioelectrical Impedance Analysis* (BIA). Data dianalisis secara deskriptif, uji hubungan menggunakan uji *chi-square* dan *fisher exact test* .

Hasil penelitian menunjukkan terdapat hubungan antara durasi latihan ($p=0,000$) OR = 35 ($8,391<OR<145,985$), frekuensi latihan ($p=0,013$) OR = 5 ($1,096<OR<22,820$), aktivitas fisik ($p=0,036$) OR = 4,087 ($1,207<OR<13,838$) dan kecukupan protein ($p=0,000$) OR = 21 ($6,125<OR<72,003$) dengan massa otot sedangkan antara uang saku untuk makan ($p=1,000$), diet ($p=0,679$), konsumsi *kafein* dan *soft drink* ($p=0,510$), konsumsi *fast food* (p=0,218), konsumsi suplemen ($p=0,297$), pengetahuan gizi ($p=0,150$), kecukupan karbohidrat ($p=0,470$), kecukupan lemak ($p=0,077$) dan keseimbangan energi ($p=0,149$) tidak ada hubungan dengan massa otot. Faktor yang paling mempengaruhi massa otot secara berututan adalah durasi latihan, kecukupan protein dan terakhir aktivitas fisik.

Kesimpulan penelitian ini adalah durasi latihan, kecukupan protein dan aktivitas fisik dapat mempengaruhi massa otot pada atlet kempo. Sebaiknya atlet kempo lebih menjaga dan memantau nilai massa otot pada range normal dan dilakukan pemeriksaan rutin serta meningkatkan asupan gizi sesuai kebutuhan.

Kata kunci : massa otot, olahraga kempo, atlet