

# Pengaruh latihan fisik aerobik overtraining terhadap kadar brain derived neurotrophic factor (BDNF) dan memori pada otak tikus (*rattus norvegicus*) = Effect of aerobik exercise overtraining on levels of brain derived neurotrophic factor (BDNF) and memory in the rat brain (*rattus norvegicus*)

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## Abstrak

Overtraining syndrome adalah menurunnya kapasitas fisik, emosi dan imunitas akibat pelatihan yang terlalu sering tanpa periode istirahat yang cukup. Overtraining berdampak pada penurunan kadar BDNF dan memori pada atlet. Penelitian ini bertujuan untuk melihat pengaruh latihan fisik aerobik overtraining terhadap kadar brain derived neurotrophic factor (BDNF) dan memori pada tikus. Metode penelitian eksperimental dengan subjek penelitian tikus (*Rattus norvegicus*) galur Wistar jantan dewasa, 8-10 minggu, berat badan 200-250 gr. Terbagi atas kelompok kontrol, aerobik dan overtraining. Hasil pengukuran ditemukan kadar BDNF pada kelompok overtraining lebih rendah daripada kelompok aerobik dan kontrol. Terdapat perbedaan kadar BDNF pada kelompok Aerobik dan overtraining ( $p = 0,002$ ). Hasil uji memori dengan water-E maze menunjukkan peningkatan durasi waktu dan jumlah kesalahan yang dilakukan oleh kelompok overtraining ( $p = 0.03$ ). Dari penelitian ini disimpulkan latihan fisik aerobik overtraining dapat menurunkan kadar BDNF dan memori pada tikus.

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Overtraining syndrome is the reduced capacity of the aspects of the physical work, emotions and immunity as a result of the type, intensity, duration and frequency of training too often without sufficient resting period. Overtraining impact on BDNF levels and memory decline in athletes. This study aimed to examine the effect of aerobic physical exercise overtraining on BDNF levels and memory in the rat brain. Experimental research methods to study. Subjects were rats (*Rattus norvegicus*) adult male Wistar strain, aged 8-10 weeks, initial body weight between 200-250g. Divided into 3 groups: control, aerobic and overtraining. The test results mean BDNF levels are the lowest seen in the group of overtraining. The results of statistical tests are the most significant differences in the mean levels of BDNF Aerobic and overtraining group with  $p = 0.002$ . The results of the memory test with a water-maze E showed increased duration and the number of errors made by the overtraining group ( $p = 0:03$ ). This study suggests that overtraining can affect the decrease in BDNF levels and memory in mice.