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Pengaruh indeks massa tubuh terhadap keseimbangan postur dan kekuatan otot tungkai atas pada anak 8-10 tahun = The effect of body mass index on postural balance and lower limb muscle strength in children aged 8-10 years

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Abstrak

[ABSTRAK
Pendahuluan. Masalah gizi pada anak tidak hanya gizi kurang tetapi juga gizi lebih, termasuk berat badan berlebih dan obesitas. Status gizi anak dapat dinilai menggunakan indeks massa tubuh (IMT). Perbedaan IMT dapat mengakibatkan perubahan anatomik akibat adanya peningkatan beban tubuh sehingga mempengaruhi performa motorik termasuk keseimbangan postur, kekuatan otot dan lokomosi. Tujuan. Penelitian ini bertujuan menjelaskan pengaruh IMT terhadap keseimbangan postur dan kekuatan otot tungkai atas serta mengetahui adanya korelasi antara keseimbangan postur dengan kekuatan otot tungkai atas pada anak 8 – 10 tahun. Metode. 63 anak usia 8 – 10 tahun terbagi dalam 3 kelompok IMT normal, IMT berat badan berlebih dan IMT obesitas. Pengukuran keseimbangan dengan single leg balance test pada MatScan dan didapatkan hasil area centre of pressure (COP). Kekuatan otot isometrik dari ektensor panggul dan ektensor lutut diukur menggunakan hand-held dynamometer. Hasil. Area COP pada anak obesitas lebih besar signifikan dibandingkan anak berat badan berlebih (p = 0.004) dan anak normal (p = 0.000). Tidak ada perbedaan signifikan antara kekuatan ekstensor panggul anak dengan IMT obesitas daripada IMT berat badan berlebih dan IMT normal yang tidak signifikan (p = 0,527). Kekuatan ekstensor lutut anak obesitas lebih besar secara signifikan dibandingkan anak berat badan berlebih (p = 0.038) dan anak normal (p = 0.001). Namun tidak ada hubungan signifikan antara area COP dengan kekuatan otot ekstensor panggul dan ekstensor lutut. Kesimpulan. Anak obesitas memperlihatkan penurunan keseimbangan postur dan peningkatan kekuatan otot ekstensor lutut dibandingkan dengan anak berat badan berlebih dan berat badan normal. Tidak ada korelasi signifikan antara keseimbangan dan kekuatan otot.
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ABSTRACT
Introduction. Nutritional problems in children are not only malnutrition but also overnutrition, including overweight and obesity. It can be assessed using the body mass index (BMI). The BMI difference can leads anatomic changes due to an increased of body loading that might affect the motor performance, including changes in balance posture, muscle strength and locomotion. Purposes. to explain the influence of BMI on the balance posture and lower limb muscle strength and to assess a correlation between the balance posture and lower limb muscle strength in children aged 8-10 years. Methods. 63 children aged 8-10 years are divided in 3 groups of BMI-normal, BMI-overweight and BMI-obese. The postural balance was assessed by single leg balance test on MatScan and the centre of pressure (COP) area was recorded. Isometric muscle strength of hip extensor and knee extensor were measured using a hand-held dynamometer. Results. Obese children had larger COP area significantly than overweight (p = 0.004) and normal children (p = 0.000). There were no significant differences in hip extensor muscle strength between obese children with overweight and normal children (p = 0.527). The knee extensor muscle strength in obese group was

significantly higher than the overweight groups (p = 0.038) and normal group (p = 0.001). However there was no significant correlation between the hip extensor and knee extensor muscles strength with COP area. Conclusion. Children with BMI obesity had decreased balance posture and increased knee extensor muscle strength when compared to overweight and normal children. There was no significant correlation between the postural balance and muscle strength.;Introduction. Nutritional problems in children are not only malnutrition but also overnutrition, including overweight and obesity. It can be assessed using the body mass index (BMI). The BMI difference can leads anatomic changes due to an increased of body loading that might affect the motor performance, including changes in balance posture, muscle strength and locomotion. Purposes. to explain the influence of BMI on the balance posture and lower limb muscle strength and to assess a correlation between the balance posture and lower limb muscle strength in children aged 8-10 years. Methods. 63 children aged 8-10 years are divided in 3 groups of BMI-normal, BMI-overweight and BMI-obese. The postural balance was assessed by single leg balance test on MatScan and the centre of pressure (COP) area was recorded. Isometric muscle strength of hip extensor and knee extensor were measured using a hand-held dynamometer. Results. Obese children had larger COP area significantly than overweight (p = 0.004) and normal children (p = 0.000). There were no significant differences in hip extensor muscle strength between obese children with overweight and normal children (p = 0.527). The knee extensor muscle strength in obese group was significantly higher than the overweight groups (p = 0.038) and normal group (p = 0.001). However there was no significant correlation between the hip extensor and knee extensor muscles strength with COP area. Conclusion. Children with BMI obesity had decreased balance posture and increased knee extensor muscle strength when compared to overweight and normal children. There was no significant correlation between the postural balance and muscle strength., Introduction. Nutritional problems in children are not only malnutrition but also overnutrition, including overweight and obesity. It can be assessed using the body mass index (BMI). The BMI difference can leads anatomic changes due to an increased of body loading that might affect the motor performance, including changes in balance posture, muscle strength and locomotion. Purposes. to explain the influence of BMI on the balance posture and lower limb muscle strength and to assess a correlation between the balance posture and lower limb muscle strength in children aged 8-10 years. Methods. 63 children aged 8-10 years are divided in 3 groups of BMI-normal, BMI-overweight and BMI-obese. The postural balance was assessed by single leg balance test on MatScan and the centre of pressure (COP) area was recorded. Isometric muscle strength of hip extensor and knee extensor were measured using a hand-held dynamometer. Results. Obese children had larger COP area significantly than overweight (p = 0.004) and normal children (p = 0.000). There were no significant differences in hip extensor muscle strength between obese children with overweight and normal children (p = 0.527). The knee extensor muscle strength in obese group was significantly higher than the overweight groups (p = 0.038) and normal group (p = 0.001). However there was no significant correlation between the hip extensor and knee extensor muscles strength with COP area. Conclusion. Children with BMI obesity had decreased balance posture and increased knee extensor muscle strength when compared to overweight and normal children. There was no significant correlation between the postural balance and muscle strength.]