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Simple Assessment of Lower Extremity Soft Tissue Pain in Obesity

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Loss of physical functioning due to lower extremity soft tissue pain (LESTP) is not well studied. LESTP have been linked to difficulty completing activities of daily living. Obese patients have high incidences of LESTP in the back, knee, ankle, and feet as barriers to a physically inactive lifestyle. The American College of Sports Medicine (ACSM) recently published simple methods to assess physical functioning for adults with a chronic disease or disability. **PURPOSE:** To see if the ACSM methods can be implemented in a medical practice, and to examine the relationships between lower-extremity exertional symptoms, BMI and biomechanical abnormalities with poor physical functioning. **METHODS:** 15 subjects (12 female, 3 male) completed informed consent and underwent a brief medical history and physical exam for symptoms and signs of LESTP. Weight and height were recorded; knee and ankle alignments were measured (Ingham's knee mal-alignment and foot rotation instruments). Dynamic stability was assessed by Trendelenberg test, 2-legged half-squats and 1-legged squats. Functional performance was assessed by gait speed, sit-to-stand, and stair climb tests. Associations between LESTP, biomechanical burdens, and poor physical functioning were examined with Fischer's Exact tests and Spearman's rank correlation. **RESULTS:** Fisher's Exact test revealed significant relationships between BMI vs abnormal gait ($p < 0.01$), as well as BMI vs two-legged squat mechanics ($p < 0.05$). There were strong associations between physical functioning measures: sit to stand vs stair time $r = -0.64$, $p < 0.05$; gait speed vs sit to stand $r = 0.60$, $p < 0.05$; gait speed vs stair climb time $r = -0.65$, $p < 0.05$. Strong associations were also seen between BMI and dynamic instability score $r = 0.712$, $p < 0.005$, as well as dynamic instability and poor physical functioning $r = 0.50$, $p < 0.05$. Significant correlation was found between BMI and biomechanical burdens ($r^2 = 0.273$, $p < 0.05$). **CONCLUSION:** In this pilot study, BMI was associated with dynamic instability, and dynamic instability was associated with poor physical functioning. These findings support the concept of sarcopenic obesity, wherein body mass outstrips musculoskeletal ability to provide normal biomechanical functioning and impairs independence and activities of daily living.