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Introduction

e term "gestational diabetes" refers to glucose intolerance that begins or is rst noticed during pregnancy [1]. Despite the fact that a er giving delivery, glucose levels return to normal, up to 50% of women with GDM go on to acquire type 2 diabetes mellitus, making GDM the leading cause of T2D in young women [2]. In spite of this well-known risk, few nations, including Sweden, have formal follow-up procedures [3]. Lifestyle modi cations a er GDM can lower the risk of T2D, according to intervention studies, but the outcomes have been con icting. In this demographic, more information is required regarding the connection between lifestyle and glucose tolerance [4]. Prior research on the e ects of exercise on glucose metabolism frequently used middle-aged participants with additional risk factors or participants with T2D who had already received a diagnosis [5]. Strength has been associated with improved metabolic health and lowered T2D risk. Insulin sensitivity and glucose tolerance may also be correlated with metabolic exibility during exercise, which is the capacity to e ectively adapt substrate metabolism to glucose/fatty acid availability and metabolic demand [6]. Peak fat oxidation (PFO), the highest level of fat utilisation that typically takes place at 30–60% of an individual's maximum exercise intensity, is a common way to quantify metabolic [7]. e relationship between exercise-induced fat oxidation and glucose intolerance is still unclear, and PFO in women with GDM has not been assessed [8]. ere is currently insu cient information on how various exercise types and objectively assessed tness factors relate to declining glucose tolerance a er GDM [9]. Design needs such information. Intervention programmes for GDM-a ected women may also be made available to other groups [10]. erefore, the main purpose of the study was to investigate the relationships between muscle strength, fat oxidation, self-reported activity, and glucose tolerance and other metabolic outcomes a er GDM. ere were three objectives: to explore for all groups of women how activity and tness are associated with several key glycemic measurements and clinical outcomes at 10 years; to determine how activity and tness a ect longitudinal changes in glycemic and clinical variables between 6 and 10 years; and to explore whether reported activity or measured tness variables di er between women with normal glucose tolerance, impaired glucose metabolism, or T2D at 10 years a er GDM. We It is assumed that greater glycemic control and other indicators of metabolic health are linked to both aerobic tness and muscle strength. Also, we predicted that objectively assessed tness measures would be more strongly correlated with metabolic health than self-reported activity. e waist and hip circumferences were measured to the closest 0.5 cm in three groups based on fasting and venous glucose levels. Air displacement plethysmography was used to measure the body composition at the 10-year visit. e individuals were rst approached to join 6 years a er giving birth and are a part of a cohort study of women in the Gothenburg area who were diagnosed with GDM during the years. 237 women in all showed up for the initial appointment, which included anthropometric measures, an oral glucose tolerance test (OGTT)03s[T e i fomaitionfromr