CONCLUSION

In patients with T2DM, increased insulin resistance is strongly associated with lower testosterone levels and reduced beta-cell function. These findings highlight the interaction between metabolic dysfunction and hormonal status in middle-aged and elderly patients with T2DM.

EP_A069

WHOLE-BODY PHASE ANGLE AS A MARKER OF CELLULAR HEALTH IN A WORKPLACE LIFESTYLE INTERVENTION

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INTRODUCTION

Phase angle (PhA) derived from bioelectrical impedance analysis reflects cellular integrity and has emerged as a potential marker of metabolic health. Its role in detecting early physiological changes during lifestyle intervention remains underexplored in workplace obesity programmes.

METHODOLOGY

This longitudinal study included 30 adults with complete paired measurements enrolled in a 12-month workplace lifestyle programme. Body composition was assessed using multifrequency bioelectrical impedance analysis. Measurements included whole-body PhA, body cell mass (BCM), skeletal muscle index (SMI), and extracellular water to total body water ratio. Paired comparisons and correlation analyses were performed.

RESULTS

Mean PhA increased modestly from 5.59 ± 0.70° to 5.67 ± 0.69°, although this did not reach statistical significance ($p = 0.17$). Changes in PhA were not significantly associated with changes in BCM ($r = -0.03$, $p = 0.89$). However, baseline PhA demonstrated a moderate positive association with SMI ($r \approx 0.51$, $p < 0.01$), suggesting a link between cellular integrity and muscle status. Individual trajectories revealed heterogeneous responses despite minimal weight change.

CONCLUSION

Whole-body phase angle provides insight into cellular health beyond conventional anthropometric measures. While short-term changes were modest, PhA may serve as a clinically useful adjunct for monitoring physiological response in obesity management programmes.

EP_A070

INTEGRATING BODY COMPOSITION AND BIOCHEMICAL MARKERS FOR METABOLIC RISK STRATIFICATION IN LIFESTYLE INTERVENTION

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INTRODUCTION

Obesity is a heterogeneous metabolic disease in which individuals with similar body weight may exhibit markedly different physiological risk profiles. Conventional monitoring using weight alone may fail to capture underlying metabolic and cellular changes during lifestyle intervention. Integrating body composition and biochemical markers may improve risk stratification in clinical practice.

METHODOLOGY

A prospective observational analysis was conducted among participants enrolled in a structured lifestyle programme. Baseline and follow-up assessments included biochemical markers (fasting glucose, renal function, lipid profile, and liver enzymes) alongside body composition parameters derived from bioelectrical impedance analysis, including percent body fat, visceral fat area, skeletal muscle index (SMI), and phase angle (PhA). Changes over time and associations between metabolic and body composition variables were analyzed.

RESULTS

Metabolic responses varied substantially despite similar anthropometric profiles. Renal function improved significantly, with increased estimated glomerular filtration rate (eGFR) observed over time ($p = 0.01$), and was inversely associated with fasting glucose ($r = -0.41$, $p < 0.01$). Lipid abnormalities persisted, although reductions in low-density lipoprotein cholesterol were noted ($p = 0.04$). Total cholesterol remained elevated and correlated positively with fasting glucose ($r = 0.36$, $p = 0.02$). Improvements in aspartate aminotransferase were observed ($p = 0.03$), while other liver markers remained stable. Notably, body composition parameters, including PhA and SMI, demonstrated variability independent of weight change, reflecting heterogeneous physiological adaptation.

CONCLUSION

Metabolic and physiological responses to lifestyle intervention are heterogeneous and not fully captured by changes in body weight alone. The integration of bioimpedance-derived parameters with biochemical markers provides a more comprehensive approach to metabolic risk stratification and may support more personalized clinical management in obesity care.

EP_A071

BEYOND BODY WEIGHT: BODY COMPOSITION AND CELLULAR HEALTH IN A WORKPLACE OBESITY INTERVENTION PROGRAMME

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INTRODUCTION

Obesity is a chronic disease characterized by complex alterations in body composition and metabolic health. Traditional reliance on body weight may overlook important physiological adaptations during lifestyle intervention.

METHODOLOGY

A cohort of 99 participants at programme entry underwent body composition assessment using bioelectrical impedance analysis. Parameters included percent body fat (PBF), visceral fat area (VFA), skeletal muscle index (SMI), and phase angle (PhA). Correlation analyses were performed to explore relationships between adiposity, muscle mass, and cellular health.

RESULTS

Participants demonstrated elevated adiposity (PBF 38.9 ± 8.9%; VFA 142.9 ± 56.1 cm²). PhA was inversely associated with VFA ($r \approx -0.23$, $p < 0.05$) and positively associated with SMI ($r \approx 0.49$, $p < 0.001$). Notably, a subset of overweight individuals exhibited relatively preserved PhA, indicating heterogeneity in metabolic health despite similar adiposity levels.

CONCLUSION

Body composition and PhA provide complementary insights into metabolic health beyond body weight. These findings support the role of bioimpedance-derived parameters in identifying metabolic heterogeneity and guiding personalized obesity management.

EP_A072

BLOOD PRESSURE IMPROVES AFTER BARIATRIC SURGERY ACROSS PATIENT SUBGROUPS

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INTRODUCTION

Hypertension is common in obesity and increases cardiovascular risk. Bariatric surgery improves metabolic health, but subgroup differences in blood pressure response remain unclear. This study examined 1-year changes in systolic blood pressure (SBP) and diastolic blood pressure (DBP) after bariatric surgery across sex, age group, and diabetes status.

METHODOLOGY

This study included 32 obese adults undergoing bariatric surgery, with blood pressure measured at baseline, 6 and 12 months. Generalized estimating equation models were used to evaluate changes in SBP and DBP over time, adjusting for age, sex, surgery type, diabetes category, baseline body mass index, antihypertensive medication use, and baseline blood pressure. Interaction terms were tested to assess differences in blood pressure trajectories across subgroups.

RESULTS

Participants were predominantly female (67.4%), with a mean age of 36.9 ± 6.2 years and a mean body mass index of 40.7 ± 8.8 kg/m². Hypertension and diabetes were present in 40.6 and 31.3% of participants, respectively. There was a significant time effect for both SBP ($p < 0.001$) and DBP ($p = 0.004$). At 12 months post-surgery, mean SBP decreased by 15 mmHg and DBP by 7.9 mmHg compared with baseline (both $p < 0.001$). No significant interactions were observed between time and sex, diabetes category, or age category, indicating that blood pressure improvements were comparable across subgroups.